

San Joaquin Valley Growth Response Study Phase II

Sponsored by California Department of Transportation

RAND
University of Southern California
with
Fehr & Peers
and
LDA Consulting

Documented Briefings
Modesto & Fresno Workshops
November, 2002

Contents

- ❖ Preface
- ❖ Module I: Purpose and Overview
- ❖ Module IIA: Smart Growth Best Practices
- ❖ Module IIB. New Regionalism
- ❖ Module III: Toolkit Development
- ❖ References
- ❖ Appendices:
 - A. Stakeholder Interviews
 - B. Model Screening
 - C. Model Developer/User Interviews
 - D. Examples of LU-T Tools (Jerry Walters, Fehr & Peers)

Contents

Preface.....	3
Module I: Purpose and Overview.....	11
Module IIA: Smart Growth Best Practices	32
Module IIB. New Regionalism.....	53
Module III: Toolkit Development.....	73
References.....	88
Appendices:	
A. Stakeholder Interviews.....	92
B. Model Screening.....	102
C. Model Developer/User Interviews.....	110
D. Examples of LU-T Tools (Jerry Walters, Fehr & Peers).....	116

Preface

The San Joaquin Valley Growth Response Study is driven by concerns about the effects of rapid growth in the San Joaquin Valley and the difficulties of responding to that growth, as well as by the existence of new ideas about smart growth, livable cities and sustainability. It is informed by a continuously evolving set of sophisticated models and tools for helping predict and guide growth. It is a reflection that land use and transportation planning are not integrated sufficiently enough to achieve effective use of land and economic and social resources. And it is being undertaken with the knowledge that political will is a necessary, major component in tackling growth issues, and that can be best assembled when understandable, quick-response, and informative tools are used as part of the planning process.

The Phase II Consultant Team

- ❖ RAND
- ❖ USC School of Policy, Planning, and Development
- ❖ Fehr & Peers Transportation Consultants
- ❖ LDA Associates

Caltrans District 6 (Fresno) has commissioned the San Joaquin Valley Growth Response Study—a comprehensive approach to guiding land use and transportation planning in the San Joaquin Valley. It is a three-phase study. Phase II has been conducted by a team of consultants including RAND, USC School of Policy, Planning, and Development, with Fehr & Peers Transportation Consultants, and LDA Associates.

RAND

RAND is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. RAND's work is diverse, informing decisions regarding national security, as well as social issues in areas including education, health, civil justice, environmental science, technology and policy. In all cases, RAND serves the public interest by widely disseminating research findings.

Rae Archibald, retired Vice President and CFO of RAND, has also served as Deputy Fire Commissioner of New York and Professor of Planning and Urban Studies. Rae grew up in the San Joaquin Valley, and is well-versed in the complex issues facing decisionmakers at all levels of government. Rae has served as the Principal Investigator for this phase of the study.

Mark Hanson, Research Manager/Analyst, brings a background in urban and environmental planning as well as sustainable growth and natural resource conservation. Mark has served as Project Manager for the consultant team.

Cont'd

USC School of Policy, Planning and Development

The School of Policy, Planning and Development at the University of Southern California joins the School of Public Administration and the School of Urban Planning and Development, each ranked among the top of such schools in the nation. The learning synergies and interdisciplinary research made possible by this collaboration allow USC faculty and students to address the challenges of governing, managing, and leading in our complex urban and regional milieu emerging all around the world.

Tridib Banerjee specializes in urban design, international development, and the political economy of planning. He chairs USC's Joint Programs in Urban Design, and serves as the Director of the Community Development and Design Forum. Tridib served as Associate Dean of the former School of Urban and Regional Planning from 1982 to 1986, and Vice Dean of the School of Policy, Planning and Development from 1998 to 2001. Currently he is a co-Principal Investigator of USC's Center for Economic Development.

Deepak Bahl, Associate Director of USC's Center for Economic Development, engages in work that increases the capacity of public, private and nonprofit economic development institutions and organizations operating in distressed neighborhoods and developing new employment and business opportunities.

Three graduate research assistants have helped in compiling the background research materials. They are: Ajay Agarwal, a Master of Policy Student; Shipra Bhardwaj, a Master of Real Estate Development student; and Navin Vutha, a Master of Planning student.

Cont'd

Fehr & Peers Transportation Consultants

Fehr & Peers provides transportation planning and traffic engineering services to public agencies, institutions, and private companies. Projects range from local traffic and parking studies to major regional transportation plans to traffic engineering design, with expertise in all forms of transportation.

Jerry Walters, Principal, has managed transportation planning projects in the United States and overseas, with primary areas of expertise that include integrated land use/transportation studies, growth management plans and General Plans for mature cities, rapidly growing "edge cities", planned "new towns", and "smart growth" planning.

LDA Consulting

LDA Consulting is an independent consulting firm that offers services to government agencies and non-governmental clients in developing and evaluating public policies and programs, especially in the area of transportation and environmental issues.

Lori Diggins, Principal, has experience largely in areas of transportation management and strategic planning, as well as facilitating advisory groups, task forces, public meetings and forums, and strategic planning workshops to inform stakeholders and build consensus for public agency decisionmaking.

A Three Phase Initiative

◆ Phase I

- San Joaquin Valley Growth Response “White Paper” identifying issues and baseline information
 - ❖ Norman Y. Mineta Transportation Institute

◆ Phase II

- Initial workshops discussing land use, transportation and environmental linkages and quality growth ideas
- Specification of “tool kit” to foster integrated land use and transportation planning
 - ❖ RAND, USC, Fehr and Peers, and Lori Diggins

◆ Phase III

- Demonstration projects in Fresno-Clovis metropolitan area and a small community in the northern San Joaquin Valley
 - ❖ VRPA Technologies, Fehr and Peers, and Others

This documented briefing describes the second stage of a three stage initiative intended to help communities and planners in the San Joaquin Valley of California as they plan for continuing exceptional growth. The focus of the overall study is on methods for integrating land use and transportation planning and on the critical issues that can be addressed using the newest transportation and land use planning tools.

Accordingly, Phase I of this initiative developed baseline information and resulted in the publication at the beginning of Phase II of a “white paper” (1) that has been distributed to interested parties throughout the San Joaquin Valley. Some of the highlights of that white paper are discussed later in this briefing.

This briefing presents the work of Phase II of this initiative. The briefing has been presented to interested stakeholders at two workshops in Modesto and Fresno, California, in November 2002. The primary purpose of Phase II has been to consider the information developed in Phase I and then to recommend a suite of land use and transportation modeling and outreach tools that the communities and planners could use in a “demonstration” project.

Beginning with these workshops, Phase III is a demonstration project using integrated land use and transportation planning tools in the Fresno-Clovis metropolitan area and a smaller community in the northern San Joaquin Valley.

(1) California Department of Transportation. 2002. *San Joaquin Valley Growth Response Study White Paper—Phase I*. Office of Transportation Planning, District 6 (Fresno). January. (<http://www.dot.ca.gov/dist6/svgrrs.pdf>)

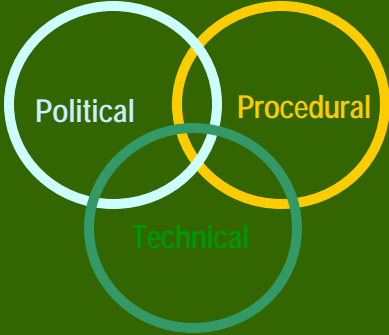
Timeline


1999	2000	2001	2002	2003	2004	2005
	PHASE I		Mineta Transportation Institute			
		PHASE II		RAND, USC, Fehr & Peers, LDA		
			PHASE III			VRPA, Fehr & Peers, and Others

The outreach portion of Phase III began in November 2002 and will continue throughout the duration of the project, which is slated to end about mid-2004.

VRPA Technologies is the lead consultant conducting Phase III of the overall initiative.

Discuss Barriers and Opportunities





To conducting:

- comprehensive
- integrated
- iterative

transportation and land use planning in
the San Joaquin Valley

The purpose of the Phase II workshop is to discuss barriers to and opportunities for conducting integrated land use and transportation planning with stakeholders in the San Joaquin Valley. The presentations briefly review the findings articulated in the white paper (Module I), present some best practices for smart growth and the so-called “new regionalism” (Module II), discuss the development of a “tool kit” of modeling and outreach tools that can help improve integrated land use and transportation planning (Module III), and then describe how some of these tools have been used in other communities (Modules IV and V, contained in Appendix D of this document.)

Note that technical tools are available, and certain procedures are generally followed, but planning is inevitably a *political* activity, thus the importance of outreach and involvement of stakeholders as well as elected politicians in the planning process cannot be overemphasized.

Note too that the best land use and transportation planning processes are *integrated*. Neither process is as effective as it can be when done in isolation of the other. Although General Plans have separate land use and circulation elements (along with open space, conservation, housing, noise and safety elements), generally the more integrated the land use and circulation elements, the better the plan. Further, the tools to support planning must be *scalable*, and they must be able to address regional, local and multi-jurisdictional issues and ideas.

It is also important to reiterate that the planning process is *iterative*. While Phase III will be a demonstration project, its ultimate success will depend upon refinements and adaptations over time as new issues arise and changing growth patterns present themselves.

It is in the spirit of planning *with* our communities, not *for* them, and envisioning planning as an continuous, adaptive, political process that this briefing is presented.

Questions about the San Joaquin Growth Response Study

should be addressed to:

Marta Frausto , Contract Manager
San Joaquin Valley Growth Response Study
Caltrans, District 6 (Fresno)
1352 W. Olive Street
Fresno, CA 93768
(559) 488-4168

Module I: Overview and Purpose

Phase I Review

A. Key Issues*

- Unemployment & Persistent Poverty
- Need for Economic Development
- Loss of Prime Agricultural Land
- Lack of Strong Sense of Identity
- Distrust of Governments
- Need for Public-Private Partnerships
- Environmental Concerns
- Transportation Issues including Transit
- Preservation of Cultural Heritage

*Source: Mineta Institute, Phase I Report

As stated in the Phase I white paper, stakeholders in the San Joaquin Valley identify economic issues such as unemployment and persistent poverty and the loss of agricultural land as key concerns for any planning process to consider. For example, unemployment tends to run between 12 and 13.5% in the San Joaquin Valley as compared to around 5% for California as a whole. And despite significant efforts to establish growth boundaries around existing urban areas, farmland continues to be lost to urban development. The low per capita income of highly seasonal agricultural workers highlights the need for development of other economic sectors in addition to agriculture.

It is also the case that the San Joaquin Valley does not have a common sense of identity even though several communities face many of the same challenges and opportunities. This, as well as a deeply held distrust of government solutions, makes it difficult for communities to work together to solve growth problems and to develop the kind of public/private partnerships that can sometimes stimulate creative solutions to the negative effects of urban growth.

Air quality and water availability are serious concerns. The San Joaquin Valley's air is now commonly cited as amongst the worst in California, and the Federal Government may impose sanctions in the near future if improvements don't occur. Recent State law requiring proof of water availability before suburban development forces communities to focus on the tradeoff between agricultural and urban use. Water sharing agreements such as those proposed between the Coachella Valley and San Diego could also be proposed in the San Joaquin Valley.

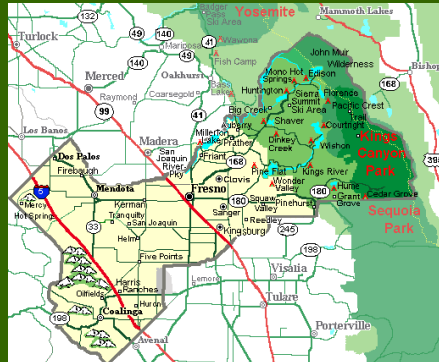
The recent failure of 1/2 cent sales tax increases in Fresno, Madera and Merced counties for funds earmarked to finance major transportation system improvements reflects citizen concern over the ability of government to meet the transportation challenges facing the San Joaquin Valley.

Finally, respect for the San Joaquin Valley's cultural history and environmental justice issues will require sophisticated solutions not yet as apparent as they might be.

Phase I Review

B. Determinants of Future Growth and Development*

- Demography
- Geography
- Environmental and Natural Resource (e.g. water) Factors
- The Economy
- Transportation Infrastructure
- Regional Cooperation
- Local Politics



*Source: Mineta Institute, Phase I Report

Source: www.fresno-county.com/fresno.html

Not unexpectedly, the Phase I white paper points out that people and space are major determinants of growth in the San Joaquin Valley. More people with an expected per capita income below the State average will pose a significant economic challenge to San Joaquin Valley communities, as growth of poorer communities implies an increase in a whole host of related social and economic concerns. The loss of farmland will also pose an economic challenge, since the loss of 1000 acres of farmland can reduce local domestic product as much as \$15 million annually. According to the California Department of Conservation, Fresno county lost some 3400 acres of farmland between 1998 and 2000 (latest data available), following the loss of more than 10,000 acres in the previous 6 years. (2)

The geography of the San Joaquin Valley, with the Sierra Nevada to the East and the Coast Range to the West, forms a 250 mile long air pocket that traps airborne impurities. As noted earlier, air pollution in the San Joaquin Valley is already below some federal standards and planning for growth will have to take this into account. Fortunately, there are modeling tools available to help decision-makers better understand tradeoffs between growth, pollution and other economic and environmental impacts.

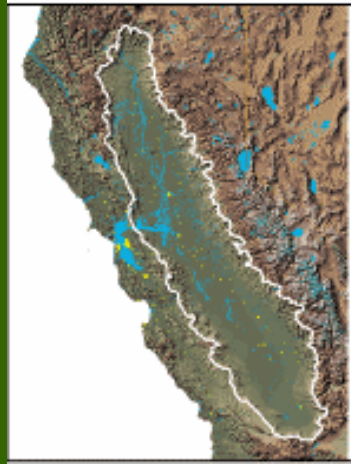
The last three bullets on the slide are perhaps best viewed collectively. The transportation infrastructure is a key determinant of a region's ability to grow, especially according to the principles of "smart growth" discussed later in this briefing. However, optimal transportation infrastructures almost always require regional cooperation and local politics will play a strong role in implementation. The State Commission on Local Governance for the 21st Century put the challenge starkly: "1. The future will be shaped by continued phenomenal growth. 2. California does not have a plan for growth. 3. Local government budgets are perennially under siege. 4. The public is not engaged." (3) It is our expectation that Phase III of this initiative will be an important step in helping engage the public in addressing the challenges of growth in the San Joaquin Valley.

(2) California Department of Conservation. 2002. (www.consrv.ca.gov/DLRP/index.htm)

(3) Commission on Local Governance for the 21st Century. 2000. *Growth Within Bounds: Planning California Governance for the 21st Century*.

Trends

Urban Growth in Central Valley, 1900- 1996



1900

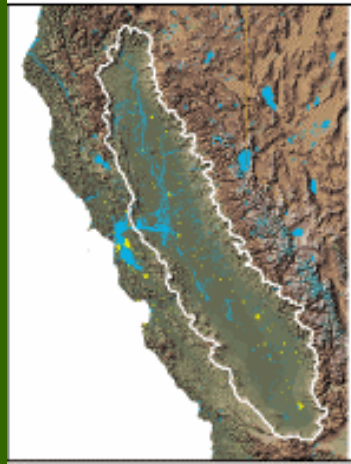
<http://ceres.ca.gov/calsip/cv/animation.html>

It is instructive to review the growth seen in and around the San Joaquin Valley. The next seven slides are an animation put together by a collaborative spearheaded by the California Environmental Resources Evaluation System of the California Resources Agency and including, among others, the US Geological Survey and the Great Valley Center. (4) The snapshots start with 1900 when urban cores such as Sacramento and Stockton are visible, as well as small towns adjacent to the railroad that traversed the greater Central Valley.

(4) California Resources Agency. 2002. *Preliminary Assessment of Urban Growth in California's Central Valley* (<http://ceres.ca.gov/calsip/cv/timeline.html>)

Trends

Urban Growth in Central Valley, 1900- 1996



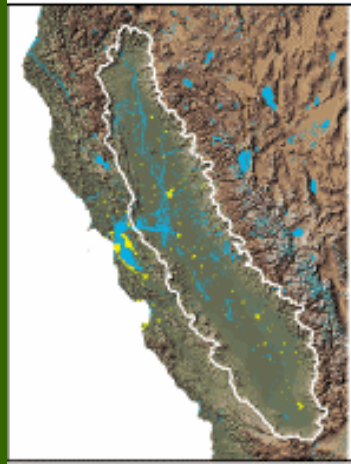
1925

<http://ceres.ca.gov/calsip/cv/animation.html>

The next slide depicting 1925 shows growth in Fresno, Bakersfield and Modesto.

Trends

Urban Growth in Central Valley, 1900- 1996



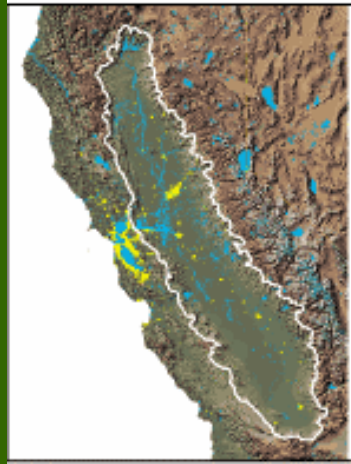
1945

<http://ceres.ca.gov/calsip/cv/animation.html>

1940 shows some growth in Sacramento, but only slight growth in Stockton and Fresno.

Trends

Urban Growth in Central Valley, 1900- 1996



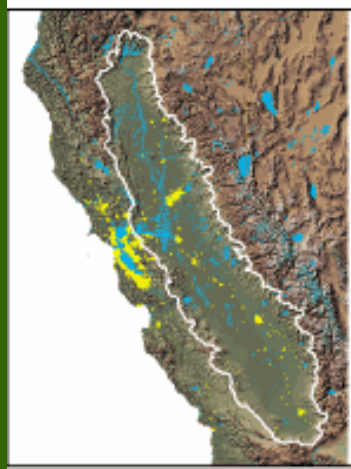
1954

<http://ceres.ca.gov/calsip/cv/animation.html>

By 1954 one can see significant changes reflecting the post World War II boom in housing. The suburbs around Sacramento were growing rapidly.

Trends

Urban Growth in Central Valley, 1900- 1996



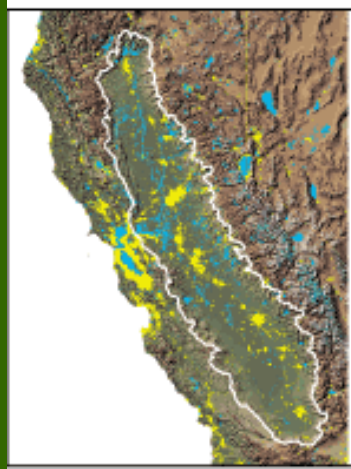
1964

<http://ceres.ca.gov/calsip/cv/animation.html>

The next snapshot in 1964 shows new development along the highway corridors between the Bay Area and Sacramento and growth in cities such as Modesto and Lodi. However, the towns in the southern part of the Central Valley remained relatively small and distinct.

Trends

Urban Growth in Central Valley, 1900- 1996



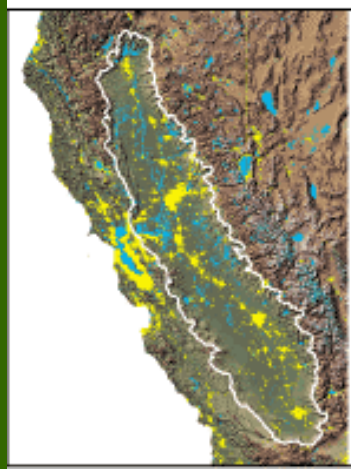
1975

<http://ceres.ca.gov/calsip/cv/animation.html>

The slide for 1975 shows the beginning of commuter corridors between Stockton, Modesto, Tracy and the Bay Area and the suburban growth in many cities up and down the Central Valley's Highway 99 corridor.

Trends

Urban Growth in Central Valley, 1900- 1996



1996

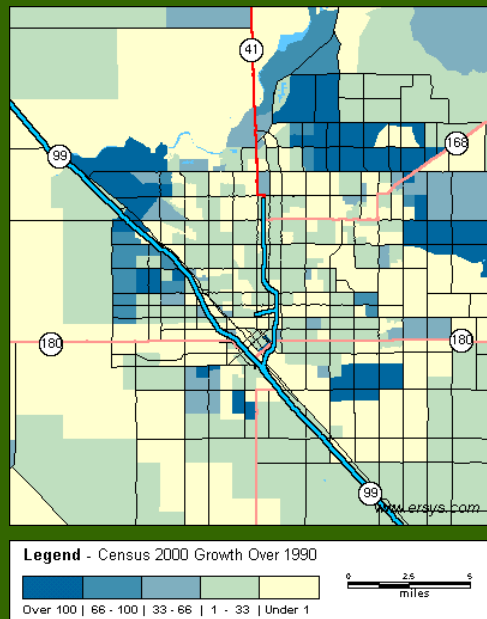
<http://ceres.ca.gov/calsip/cv/animation.html>

By 1996 the Central Valley begins to look like a linear city stretching from Redding in the north to Bakersfield in the south.

The recent growth in the Fresno/Clovis metropolitan region is reviewed next.

Trends

Fresno: Census 2000 Population Growth Over 1990



<http://www.ersys.com/usa/06/0627000/growth.htm>

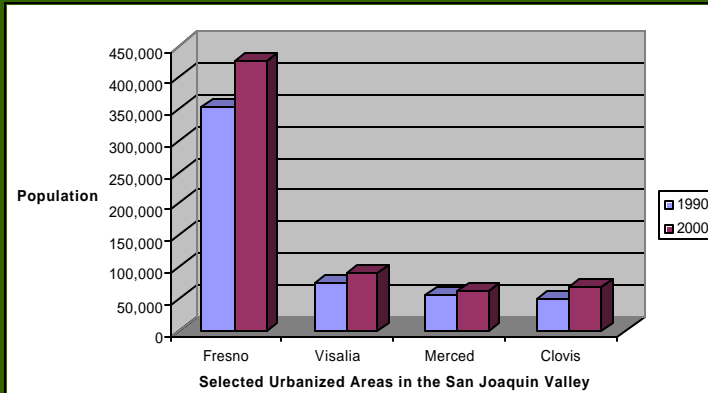
This map, prepared by ER Sys.com based on data from the U.S. Census Bureau and Synergos Technologies, Inc. is one way of showing growth in the Fresno area between 1990 and 2000.

Growth is defined as the number of people living in the area in 2000 as a percent of the number of people living in the same area in 1990. The dark areas have the highest percentage growth and the light areas have the lowest percentage growth or no growth.

Large areas of growth are where one might expect--along the Highway 99 corridor headed toward Madera. However, note also the almost parallel pattern of growth in Clovis and along the eastern Sierra foothills. This is a measure of relative intensity of growth by area. Although the percentage growth can be high when the population started low in 1990, for the most part this picture still is a useful indication of the sprawl taking place away from the urban core and the "old" suburbs of Fresno. The map is a good graphic representation of the challenges facing planners undertaking integrated land use and transportation planning in the region.

Trends In Population Growth

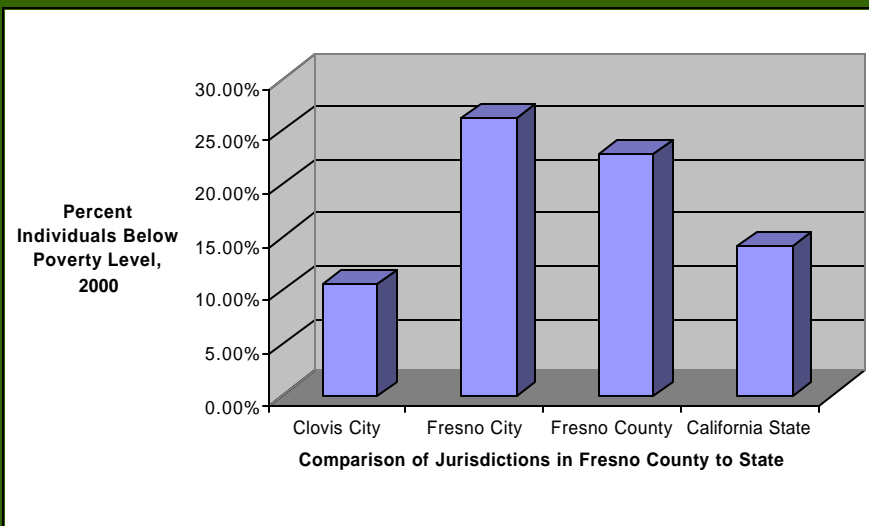
	Fresno	Visalia	Merced	Clovis
Pop. 1990	354,202	76,522	56,673	50,731
Pop. 2000	427,652	91,565	63,893	68,468
Change	73,450	15,043	7,220	17,737
% Change	20.74	19.66	12.74	34.96



This table records the double digit growth that Fresno and Clovis experienced between the 1990 and 2000 censuses. According to census data, Fresno City's population growth was almost 21% and the growth rate for Clovis approached 35%. The county as a whole grew just under 20%. Fresno's population has been growing at about a 2 1/2% annually in recent years, more than 1.5 times the rate of growth in California as a whole.

The estimates used for the development of the 2025 Fresno General Plan, show the population of Fresno in 2000 at 482,495. The estimate used by the Fresno Council of Governments for 2001 was 441,199. In both estimates, although different, the trend of strong growth is apparent.

Reality of Individuals Below Poverty Level, 2000



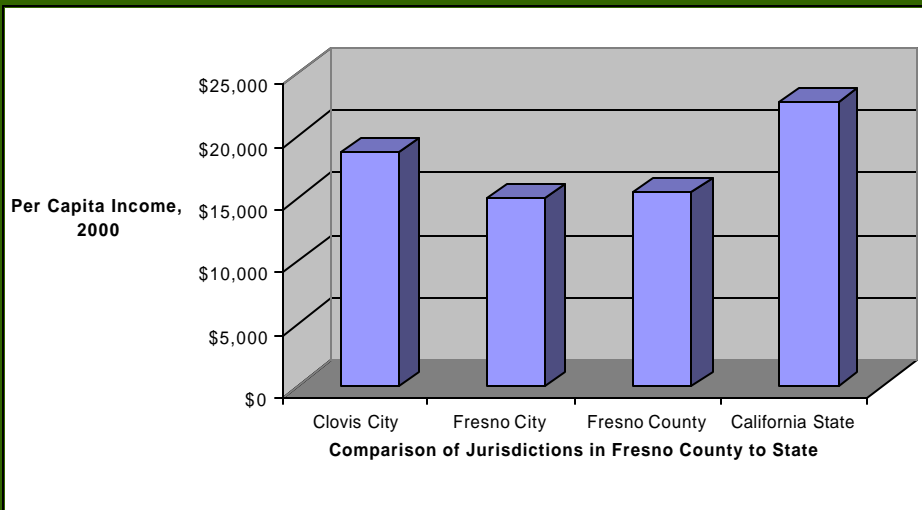
Source: U.S. Census Bureau, 2000

This chart highlights the problems of poverty faced by Fresno and Fresno County compared to the rest of the State and to Clovis. More than a quarter of Fresno's population have income below the poverty level as defined by the U.S. Census Bureau, while only 10% of Clovis residents live below the poverty level, and about 14% of State residents have income below the poverty level.

These data reinforce why in a recent survey of Californians, residents of the San Joaquin Valley were more likely to see availability of jobs as a big problem than residents of most other parts of the State. (5)

(5) Public Policy Institute of California. 2002. *Not My Problem: Californians See But Don't Feel Pain of Growth-Related Challenges Facing State*. November.

Reality of Per Capita Income, 2000



Source: U.S. Census Bureau, 2000

Another version of the economic reality is the low per capita income in the Fresno/Clovis region relative to the State as a whole. Note especially that although the per capita income in Clovis is significantly higher than in Fresno or Fresno County, all are substantially below the State as a whole.

Where Will Trends and Realities Meet?

Projected Growth	2000	2025	% Increase 2000-25
Fresno City	482,495	790,955	63.9%
Fresno County	821,797	1,301,240	58.3%
Fresno City Population % Share of County	58.7%	60.8%	

- Despite economy, rapid growth expected in population; Fresno City expected to absorb bulk of the projected growth
- Current unemployment rate: 14.3% (approx. 3 times national unemployment rate)
- Median home price

December 2001:	\$120,000
December 2000:	\$90,500
Change ('00 -'01):	+32.6%

Source: 2025 Fresno General Plan and California Department of Finance, 2002

This chart shows the projected growth in population in Fresno and Fresno County from 2000 to 2025. Note that the City is expected to grow by almost 2/3 by 2025 and the County is expected to grow by almost 60%. Importantly, the official plans suggest that the City will increase its proportion of the total County population. The increased land absorption and vehicle miles traveled can be modeled using the tools discussed below. Unfortunately, without economic development, this growth is not likely to be accompanied by relative increases in per capita income. If history remains a guide, the region is likely to remain one where real per capita income is below the median for the largest 100 US metropolitan areas, but population growth is above the median. Sacramento-Yolo, Modesto, Stockton-Lodi, Fresno and Bakersfield are all cities where this has been the case in the 1990s. (6)

This will continue to put pressure on creating infill projects, moderate income housing, and the transportation system. Three principles articulated in *A Landscape of Choice* prepared by the Growth Alternatives Alliance and incorporated as part of the 2025 Fresno General Plan serve as a high-level guide to integrated transportation and land use planning. The principles are: 1. Utilize urban land as efficiently as possible; 2. Develop livable communities that emphasize pedestrian or transit-oriented design; and 3. Recognize the importance of agriculture and the need to protect productive farmland. (7) The tools discussed later should be helpful in analyzing alternative urban patterns to meet these important needs.

Note also what the growth pressures are doing to housing costs: In just one year between 2000 and 2001 median housing prices increased more than 30%! In the 1990s median household income increased slightly more than median home prices, but that trend may be reversing. Between 1990 and 2000 Clovis added about 35% percent more housing units and Fresno and Fresno County added 15% more units. These trends and realities convey a sense of urgency in utilizing the very best tools available to help guide the growth in the San Joaquin Valley.

(6) Paul D. Gottlieb. 2002. "Growth Without Growth: An Alternative Economic Development Goal for Metropolitan Areas." *Greater Philadelphia Regional Review*. Summer.

(7) The Growth Alternatives Alliance. 1998. *A Landscape of Choice: Strategies for Improving Patterns of Community Growth*. April.

Selected Current Concerns

Land Use & Transportation

- Fiscalization Of Land Use
- Expanding Growth Boundaries
- Protection Of Agricultural Land
- Job Housing Imbalances
- SJV Perceived as a Non-unified Region
- Should there be a Region-wide Public Planning Organization?
- How to Finance Infrastructure Development and Maintenance
- Sparse Public Transit
- Worsening Air Quality

Designating certain land uses because they generate high tax revenue irrespective of demand in the community has been labeled the “fiscalization of land use”. Examples are so-called “big box” retail concerns that sometimes get overbuilt and then sit vacant for a period of time until a reuse is economically feasible. Other examples simply include different jurisdictions competing for the same revenue generating use, which sometimes results in an inefficient and scattered regional land use pattern. The tools discussed later in this briefing can help policymakers understand the effects of some of this competition and test alternative patterns of growth.

Growth boundaries have been established by jurisdictions in Fresno County but they have to be enforced and there remains work to be done to provide creative solutions to infill development and infrastructure improvements within those boundaries. A particularly vexing problem—the jobs/housing balance—is amenable to analysis using some of the new land-use and transportation planning tools integrated with sound economic forecasting.

The Council of Fresno County Governments is a voluntary association of local governments and describes itself as a “consensus builder” and a provider of technical services. It is important to seek as much regional cooperation as is feasible, and regional analysis using some of the tools discussed below may be a useful catalyst to more effective regional planning. Although it does no transportation planning, The San Joaquin Valley Unified Air Pollution Control District may have to enforce actions that make it appear as a de facto transportation planning agency.

Financing transportation infrastructure clearly will be troublesome, especially if the follow on to the recently failed Measure C fails again in 2004. An example of how much remains to be done is demonstrated by a quote from a recent State report: “In the Central Valley, Highway 99 is the major north/south route for moving goods and people, yet it still has not been fully developed to freeway standards.”(8)

Finally, current “non-compliance” with Federal Air Quality standards may be an important issue driving cooperation in land use and transportation planning—as could the issue of availability of water.

(8) Commission on Building for the 21st Century. 2001. *Invest for California*.

Excellent Local Resources for Cooperative Planning Initiatives

- Concerned Citizens
- Business Community
- Environmental Activists
- Farm Community
- Fresno Collaborative Regional Initiative
- Fresno West Coalition for Economic Development
- Educational Community
- Great Valley Center
- Growth Alternatives Alliance
- Health and Social Service Agencies
- Americans with Disabilities
- Local Government Commission
- Latino Issues Forum
- Minority and Under-represented Communities
- Political Leaders
- Seniors and Low Income Communities
- Tribal Communities

Fortunately, there are excellent community resources in the San Joaquin Valley and the Fresno region that can participate in integrated land use and transportation planning activities facilitated with new planning and visioning tools. The workshops today were a start of the outreach process that will be ongoing throughout Phase III of this project. The many organizations listed here will be important stakeholders in the resulting planning process.

Local Initiatives: Example

Growth Alternatives Alliance

- Organizations:
 - American Farmland Trust
 - Fresno Chamber of Commerce
 - Fresno County Farm Bureau
 - Building Industry Association of the San Joaquin Valley
 - Fresno Business Council
- Primary Objective:
 - To develop a common vision for future urban development and farmland protection
- Initiative:
 - A LANDSCAPE OF CHOICE: Strategies for Improving Patterns of Community Growth
 - Utilize urban land as efficiently as possible
 - Develop livable communities that emphasize pedestrian and transit oriented design
 - Recognize the importance of agriculture and the need to protect land
- Endorsement: Fresno County Board of Supervisors and 15 cities within the County

The Growth Alternatives Alliance was formed to produce *A Landscape of Choice: Strategies for Improving Patterns of Community Growth*. The Alliance perhaps could be supplemented by additional stakeholders such as environmental and environmental justice organizations and be reconstituted to become a key participant in the integrated land use and transportation planning process.

Local Initiatives: Example

Fresno Area Collaborative Regional Initiative

■ Partners:

- City of Fresno, City of Clovis, and Fresno County
- State Center Community College District
- Economic Development Corporation, Fresno County
- Private sector firms
- Regional Partnership with the California Policy Forum

■ Program Interests:

- Technology Infrastructure
- Land Use and Transportation
- Preparation of the Knowledge Worker
- Human Investment (improving effectiveness of nonprofits and human services system)
- Creation of an Innovative Culture

Another collaborative effort that is poised to champion more integrated land use and transportation planning is the Fresno Area Collaborative Regional Initiative. Included among its statement of community values for the Fresno region are: “Commitment to Outcomes”; “Art of the Possible” Thinking, and “Fact Based Decision-Making”. These tenets are compatible with the principles that underlie the use of integrated land use and transportation planning models to help plan and understand regional futures.

Policy Example

■ What if High Speed Rail Comes?

- \$9.95 billion general obligation bond measure) for proposed high speed rail system
- Timeline
 - Ballot box – Nov. 2004
 - Limited service – 2008
 - Completion – 2020
- Features
 - 700-mile long HSR system
 - Trains with sustained speeds of 200 mph
 - SJV Stops include: Fresno, Bakersfield, Visalia, Modesto, Merced, and Stockton



Source: <http://www.cahighspeedrail.ca.gov/>

Two examples of policy initiatives could have a profound effect on the transportation infrastructure and settlement patterns of the Fresno/Clovis region in the future. They are examples of changes that are amenable to sophisticated, integrated land use and transportation modeling that can make real the “fact-based” decision-making process espoused by the Fresno Area Collaborative Regional Initiative.

A bond measure proposing construction of a high speed rail system through the Central Valley will be decided by state voters on the November 2004 ballot. If the bond is approved, planning and construction would then begin on the first leg of a 700-mile long high-speed rail system.

Proposed San Joaquin Valley stops include Fresno, Bakersfield, Visalia and Merced. These communities would be connected to San Francisco and Los Angeles by electric trains traveling at sustained speeds of at least 200 mph. Extension into the Sacramento Valley would occur during a second period of construction, connecting Merced to Sacramento.

A final decision on alignments and station stops in the San Joaquin Valley would await the completion of additional studies and environmental review. While the bond measure speculates limited service by 2008, completion of the entire system is expected by 2020. The California High Speed Rail Authority anticipates hour long travel times between the state’s current urban centers and stops in the San Joaquin Valley. The measure would request \$9.95 billion in general obligation bonds to begin construction in accordance with the High Speed Rail Final Business Plan presented to Governor Davis in June 2000.

It is hard to overstate how different commute patterns could be should the system become a reality. Modeling this possibility in Phase III could help all the San Joaquin Valley communities understand some of the implications of such a dramatic possible change.

Policy Example

■ B. Beltway System

■ Objectives:

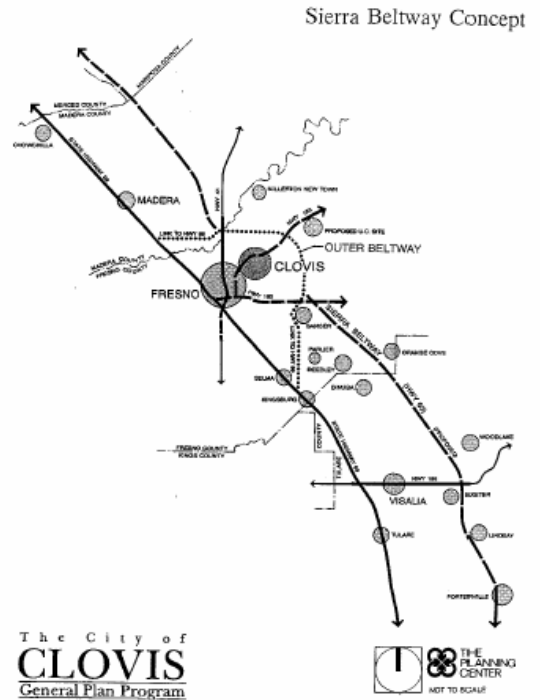
- Increase accessibility
- Make Clovis more attractive for employment and commercial uses

■ Outer Beltway:

- Link Clovis to State Highway 99
- Serve through traffic in a regional framework

■ Inner Beltway:

- Connect 3 new Urban Center Specific Plan Areas
- Connect outer beltway in NW City limits and proposed Hwy. 180 to the south
- Intercept 2 proposed transit corridors providing access and employment opportunities



Finally, although not as dramatic as high-speed rail, the City of Clovis has proposed that a highway “beltway” system be created that would link Clovis more readily to Highway 99 and improve regional transportation--especially to the “urban center” plan areas currently being contemplated by Clovis.

Is a beltway system a good idea? What might some of the effects of such a system on commutes, congestion and land use patterns be? Here again is another policy example that it might be useful to model using the integrated land use and transportation tools discussed in the next sections of this briefing.

Module II A: Best Practices

I. Best Practices Relevant to San Joaquin Valley Growth Response Study

Smart Growth Sustainable Development Livable Communities	<ul style="list-style-type: none"> ❖ Transit-Oriented Development ❖ Mixed Use Development ❖ Infill Development ❖ Adaptive Reuse ❖ Brownfields Redevelopment
Transportation	<ul style="list-style-type: none"> ❖ Innovative Bus Service ❖ Car Sharing ❖ Infrastructure Improvement ❖ Regional Transportation Authority
New Regionalism	<ul style="list-style-type: none"> ❖ Regional Growth Planning ❖ Sharing of Fiscal Resources ❖ Coordination of Land Use & Transportation

This module invokes various principles of smart growth, sustainable development, and livable communities and explains how regional planning efforts can reduce unchecked development patterns that are contributing to sprawl, congestion, and diminished air quality. It also discusses best practices known as mixed use, transit-oriented, infill, and brownfields development and how these have been successfully linked to larger integrated land use transportation strategies.

As described in the Phase I white paper, smart growth, sustainable development and livable communities ideals generally seek the creation of compact, efficient, and environmentally sensitive patterns of development that provide people with additional travel, housing and employment choices, and reductions in land consumption, per capita vehicle travel, and consequent environmental impacts. The following describes key measures required at the local and regional level to achieve these objectives:

A. Measures Required at Local Level

- Pedestrian friendly and transit-oriented land use and urban design
- Promoting infill development
- Promote higher development densities
- Additional travel choices
- Maintaining jobs/housing balance

B. Measures Required at the Regional and Local Level

- Variety of housing choices
- Adequate infrastructure capacity
- Protecting local environment
- Maintaining consistency between local and regional plans and policies

Cont'd

C. Measures Required at Regional/State Level

Promoting economic prosperity

Providing regional funding and other incentives for smart growth projects

Pursuing state-local tax reform to provide local jurisdictions greater fiscal stability

Encouraging a better balance between building housing and retail centers

Source: San Diego Association of Governments. 2002. (www.sandag.org)

II. Transit Oriented Development

A. The Crossings in Mountain View



Town Houses Create a Walkable Neighborhood



Source: Joint Venture Silicon Valley and Urban Advantage

- Infill development by replacing a defunct shopping center
- 359 housing units next to Caltrain station
- Includes townhouses, apartments, cottages, and single family detached homes

Transit oriented development (TOD) describe land development at or near public transit nodes. The Crossings in Mountain View, California, is such a development. It is directly linked to a new CalTrain commuter station that connects it to employment and retail centers throughout the Bay Area.

This transit-oriented development has 359 housing units next to a commuter station. The new development transformed a 1960s auto-oriented strip mall into a vibrant neighborhood-oriented pedestrian friendly community. The defunct shopping mall was demolished and has been replaced by a mix of townhouses, apartments, cottages, single family detached homes, and parks. The city's main tool to facilitate infill has been creation of 30 Specific Plans for the City.

Source: Calthorpe Associates. (www.calthorpe.com)

II. Transit Oriented Development



Illustration of Proposed Townhouses
Source: Calthorpe Associates

B. Richmond Transit Village

- Located where AMTRAK and BART stations join
- Infill community with affordable townhouses and small lot single family homes
- Includes retail and a pedestrian plaza

Richmond Transit Village is proposed infill development project with affordable townhouses and small lot single family homes also in the Bay Area. It is to be located near a multi-modal transit station where AMTRAK and BART stations join. The development will include a retail and pedestrian plaza.

The existing site is covered with parking lots and vacant property. The new infill community will include 231 affordable town homes and small-lot single family detached homes at density of 22 units per acre facing onto new small parks at the center of each neighborhood. The project will also include 25,000 sq. ft. of retail, a pedestrian plaza, and a new station building.

Without a unifying transportation hub such as high-frequency rail service, the potential for TOD such as the ones in Mountain View or Richmond is limited. It is unlikely that the San Joaquin Valley will see TOD around a train line, unless high speed rail is developed. Even then, such development could be inappropriate if the rail line is built through rural lands west of the urban area. A more likely scenario would be higher land use density along major transit routes or near a major highway interchange where express transit or carpooling could occur.

Source: Calthorpe Associates.
(<http://www.calthorpe.com/Project%20Sheets/richmond.htm>)

III. Mixed Use Development



View from the Main Street



Retail with Residential Facing the Courtyard

A. Paseo Colorado, Pasadena

- Serves as a multiuse destination
- Combines retail, dining, and entertainment with residential
- Replaced the existing Pasadena plaza creating an open air Urban Village
- Proximity to Gold Line (light rail under construction)

Paseo Colorado is an example of a mixed use development project that serves as a multiuse destination in Pasadena, California. The project is developed in a three square block open-air urban village that replaced an enclosed mall (Plaza Pasadena) as part of a 1970s redevelopment effort. It is within walking distance of the Gold Line station (light rail under construction).

Paseo Colorado combines retail, dining, and entertainment with residential uses. The project includes 56 retail shops, a full line Macy's store, 7 destination restaurants, 6 quick service cafes, a health club, a day spa, a super market, a 14 screen cinema, and 387 rental units.

Source: City of Pasadena.

(www.ci.pasadena.ca.us/housing/developmentprojects/PaseoColorado)

III. Mixed Use Development



Birch Street, Downtown Brea



Retail with Loft-Style Living Space on Top

B. City Of Brea

- Plan for Downtown Brea proposes a fully integrated mixed use urban district
- Birch Street mixed use design includes retail and loft style living space
- Creates immediate street life on the promenade

Another example of mixed use development can be found in Brea, California, where the city has proposed a mixed use urban district.

Birch Street, located in downtown Brea, will include retail and loft style living space. with 62 loft style apartments, 96 cottages and 40 townhouses and office space over retail all within walking distance.

Birch Street development is also a good example of a public-private partnership. The City acquired the property right of way to widen Brea Boulevard. The Brea Redevelopment Agency acquired 165 parcels, relocated approximately 300 households and businesses in the downtown area, and acquired and entered into a Disposition and Development Agreement with the developers. The Brea Redevelopment Agency funded two parking structures containing more than 1,700 spaces of free parking, the two street level parking lots, and the entire infrastructure necessary to construct this development. The Brea Redevelopment Agency has also assisted in the creation or subsidy of more than 500 low- and moderate-income housing units in Brea.

Source: City of Brea. (www.ci.brea.ca.us)

IV. Infill Development

A. City of Bakersfield/Kern COG

- City has contracted with 4 local developers to construct 10 single-family dwellings in 2002-2003
 - Lakeview In-fill Housing Program

- Strategy
 - Provide property owners with incentives to create in-fill development
 - Create ordinances that would modify or lower fees, taxes, or parking requirements to encourage in-fill development
 - Use development agreements
 - Bonus density

Source: Greater Bakersfield Vision 2020 Action Plan

Infill development describes development, or redevelopment, nearer the urban core thus reducing the consumption of open space at the urban edge. More and more examples of infill development are occurring in California, including some examples in the San Joaquin Valley. Recently, for example, Bakersfield along with the Kern Council of Governments provided incentives to and contracted with local developers to construct 10 infill housing units.

V. Adaptive Reuse



Emeryville Warehouse
Source: www.ci.emeryville.ca.us

A. Emeryville Warehouse

- Example of municipality's transformation through infill development
- Redevelopment into residential and commercial lofts
- Affordable housing development

The Emeryville Warehouse is an example of a municipality's transformation through infill development, more specifically termed adaptive reuse. In this example, the Emeryville Warehouse building built in the 1930s for a fruit drying company was reconstructed to create 141 residential and commercial lofts in 2000.

Holiday Development worked with the City of Emeryville and North Bay Ecumenical housing to make some of the units affordable.

Infill development and adaptive reuse are important smart growth strategies to consider, but may have have limited potential by themselves to accommodate fast growing population and concomitant housing needs over the next 20 years in the San Joaquin. According to projections, Fresno/Clovis should develop about 5,000 housing units per year, or 500 acres at 10 dwelling units per acre to meet future demand.

Source: City of Emeryville. (www.ci.emeryville.ca.us/)

VI. Brownfields Redevelopment



Chevron Tank Farm, Brownfield Site



Emery Station North, an Office Building
Source: City of Emeryville

A. Emery Station North

- Chevron tank and Westinghouse transformer facility redeveloped in to a mixed used transit development
- Includes office building and residential units

Emery Station North was a former Chevron tank and Westinghouse transformer manufacturing facility. After laying vacant for over 15 years, it is now Emery Station, having been redeveloped into a mixed used transit oriented development adjacent to the Emeryville Amtrak Station. Redevelopment of abandoned industrial sites for other use is often termed brownfields redevelopment.

A project called Emery Station North, an 80,000 sq.ft office building, was completed in 2001 on the site. The Terraces, a 100-unit residential project under construction, is also part of the development, and more housing is planned for the area.

A pedestrian bridge connects the development to a retail and entertainment center across the tracks.

Source: Smart Infill, Greenbelt Alliance

VII. Innovations in Bus Service

Metro RAPID, Los Angeles

- **Advanced Passenger Information**
Real-time and new multi-lingual displays
- **Signal Priority System**
High-quality signal communication
- **Level Boarding and Alighting**
Low-floor buses to provide level platform and improve access
- **Color-Coded Buses and Stations**
To share visual cues including colors and graphics themes
- **Enhanced Passenger Amenities**
Streetscape improvements, improved security lighting, and surveillance



Metro RAPID is Metropolitan Transit Authority's (MTA's) special priority bus service in Los Angeles. Currently, it is available only on Ventura Boulevard and Wilshire/Whittier Boulevard—two of L.A.'s highest density urban corridors. Metro RAPID is slated to expand in 24 corridors over the next five years in 34 cities and 11 Los Angeles County unincorporated communities.

According to an MTA report, total bus ridership has increased by nearly 40 percent on the 26-mile Wilshire/Whittier and 16-mile Ventura Boulevard corridors since the initiation of the program in June 2000. Encouragingly, nearly one-third of the increase has come from passengers new to public transit.

It is difficult to say if or when densities along Fresno's transit corridors could support investment in such a system, as they are generally low. However, this example illustrates an important opportunity to take advantage of innovations in bus services, in combination with directing growth and development towards underutilized corridors.

Key innovations of Metro RAPID include:

- Real-time changeable Light Emitting Diodes (LED) message signs that provide information on bus arrivals and departures.
- Signal priority system that facilitates smoother flow through intersections. The system allows a bus approaching an intersection to automatically trigger the signal to remain green for 10 extra seconds.
- Low-floor equipment that provides reliable boarding and alighting times that can reduce travel times when used in conjunction with other features such as fare prepayment and multiple-door boarding.

Source: Metropolitan Transit Authority. (www.mta.net)

VII. Innovations in Bus Service

Metro RAPID Phase I

Demonstration Corridors

Whittier/Wilshire Boulevard
(East Side/Mid-City)

Ventura Boulevard
(San Fernando Valley)

Phase II

Expansion in 24 corridors
over 5 years

In 34 cities and 11 LA County
unincorporated communities



Source: www.mta.net

VIII. Car Sharing

Possible to have on-demand access to a car without the costs of owning, parking, and maintaining one

Complements public transit, biking, walking, carpooling and other modes of mobility

Example: Flexcar

- ❖ 7,500+ members in more than a dozen cities and counties in 5 states and the District of Columbia
- ❖ Fleet of environmentally friendly vehicles, including gas-electric hybrids and electric cars
- ❖ Members access the cars via a specially coded Smartcard, and pay hourly or monthly for use of the vehicles
- ❖ Partnerships (Los Angeles Metropolitan area)
 - City of Burbank
 - Southern California Regional Rail Authority (Metrolink)
 - Parsons Corporation, Catellus Corporation
 - The Bikestation Coalition, Weststart

Source: www.flexcar.com

Car sharing describes group access to a fleet of passenger vehicles for uses that require cars. Car sharing makes it possible to have an on-demand access to a car without the costs of owning, parking, or maintaining one. It complements other transit modes. Car sharing has seen some success in communities where densities are sufficient to support investment in such a fleet and where public transit is also a viable option for community members.

Flexcar is an example of car sharing where members access the cars and pay hourly or monthly for the use of vehicles.

IX. Better Use of Existing Roads & Highways

Bus Rapid Transit in Center Lanes of Existing Roads



Existing roads and highways can also be refined to better support multiple travel modes (e.g., rail, bus, passenger vehicle, bicycle, etc.) and enhanced to encourage mixed land uses (e.g., retail, entertainment, commercial, residential, etc.) and pedestrian activity. The following slides are an animation that illustrates this strategy.

X. Taming the Suburban Highway

Work with large adjacent landowners;
project initiated by landowner at right



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

In this example, local landowners initiated a project to improve their typical suburban highway streetscape.

X. Taming the Suburban Highway

Buildings moved up to street; landscaping & bike lanes added;
parking and street grid at rear



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

Buildings more directly abut the wide suburban street; off street parking was added to the rear of buildings; landscaping and bike lanes were added.

X. Taming the Suburban Highway

Mixed-use buildings added one at a time on adjacent properties



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

Mixed-use buildings (e.g., commercial, loft) were added one at a time on adjacent properties.

X. Taming the Suburban Highway

Mixed-use buildings added one at a time on adjacent properties



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

X. Taming the Suburban Highway

Mixed-use buildings added one at a time on adjacent properties



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

X. Taming the Suburban Highway

Street trees added to median



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

A center median is added, with trees that further enhance the aesthetic and environmental benefits.

X. Taming the Suburban Highway

Alternative with two lanes each way for through traffic and service lane with diagonal parking



Source: Thomas Jefferson Planning District Commission
Charlottesville-Albemarle Metropolitan Planning Organization

An alternative for this example is to add a “service lane” with store-front parking away from the main road, a protected bike lane, and further landscaping.

These types of reuse with streetscape enhancements have potential in certain areas of Fresno, such as the Tower District, Uptown District, and Kings Canyon Boulevard. These types of development standards can be incorporated into zoning and design review for new development areas, especially neighborhood and community mixed use projects.

Module II B: New Regionalism

I. Overview

◆ What is Regionalism?

◆ Why New Regionalism?

- Challenges

◆ Contemporary Regionalism

◆ Best Practices

- Intra-County Collaboration
- Inter-County Collaboration

The development of land and infrastructure creates a demand for transportation. Conversely, improvements and increases in transportation capacity often lead to new land and infrastructure development. If the complex interactions between land use and transportation are not managed well, unintended results can occur leading to sprawl and leapfrog development, loss of precious farmland, unnecessary outlays for costly infrastructure, traffic congestion, pollution, and disinvestments in an area possibly creating or compounding various social and economic problems. These impacts may be avoided by better integrating transportation and land use considerations as part of the planning process. The complexity of this integration further requires the collaboration of federal, state, regional, and local governments, planners, developers, citizens, and other stakeholders promote understanding of regional transportation implications of land use and better coordinate growth.

This module describes a contemporary approach to regionalism, (“new regionalism”), some local and state level challenges in doing so, and some important lessons learned. This module describes important strategies for solving local/regional problems, leveraging resources, building social capital, diversifying funding, and sustaining regional development efforts through creative collaborations.

II. What is New Regionalism?

◆ New Regionalism seeks to re-empower and re-engage local and state government in successful problem solving

- Brings together different sectors-public, private, and non-profit-in more collaborative and entrepreneurial ways
- Starts with local and grassroots organizing and self-definition
- Organizes effective intra-regional relationships and optimizes regional self-sufficiency
- Stimulates regional dialogues about communities future and implementation strategies
- Promotes accountability
- Acknowledges need for sub-, inter-, and intra-regional strategies

Source: Speaker's Commission on Regionalism Final Report, *The New California Dream: Regional Solutions for 21st Century Challenges*, Feb. 5, 2002

Over the next two decades, California is expected to add 11-16 million new residents and over four million new households. This unprecedented growth is more than what the state experienced during the 1950s, 1960s, and 1970s combined. Significant investments in infrastructure will be needed to accommodate the projected population growth. Unfortunately, along with a \$34 billion state deficit, California also faces serious immediate and long-term issues of economic competitiveness, unaffordable housing, traffic congestion, and unemployment. In recent years, metropolitan sprawl has been further exacerbated by fiscalization of land use, fragmentation of governance, disinvestments in inner city areas, and costly infrastructure investments on the periphery of metropolitan areas. Out of competition for revenues, local governments often pursue growth policies that are discordant with neighboring jurisdictions and the state government also lacks an integrated set of growth policy goals and objectives to guide its own investment decisions. The complexity and interconnectedness of land use, transportation, and growth management requires a more integrative approach to problem solving than is now afforded by the many federal, state, and local agencies. These concerns and other matters of job and housing balance, affordable housing, workforce development, environment, and open space preservation all converge at the regional scale.

The new regionalism approach seeks to bring together public and private sectors in collaborative and entrepreneurial ways to solve regional growth, land use, and transportation problems. It is a means for identifying, organizing, and prioritizing problems and opportunities at a regional scale. Regional collaboration ensures dialogue amongst various stakeholders, development of broad consensus, community empowerment, and implementation of strategies.

III. Why New Regionalism?

“To regain and sustain the California dream in the years to come, we need a new 21st Century regionalism: better policies, practices, and governmental and civic institutions that are aligned to support essential, and promising, regional strategies to produce and sustain world class communities”

Source: Speaker's Commission on Regionalism Final Report,
*The New California Dream: Regional Solutions for 21st Century
Challenges*, Feb. 5, 2002

III. Why New Regionalism?

“The winners in the New Economy will be the regions that learn to work together to relieve traffic congestion, build affordable housing, preserve open space and promote economic development.

If government is going to be effective in this new age, it is going to have to start thinking regionally”.

Robert M. Hertzberg
Speaker Emeritus of the Assembly
Speaker's Commission on Regionalism, 2002
[www.regionalism.org]

IV. Challenges: Regional Collaboration

- ❖ Fragmented Metropolitan Governance
- ❖ State Mandate
 - State requires regional planning as part of funding infrastructure investments at local level
- ❖ Fiscal Disincentives
 - Unintended consequence of Prop. 13; competition for local revenues among local governments
- ❖ Limits of Council of Governments (COGs)
 - Advisory role only
 - Lack the regulatory powers or fiscal tools necessary to promote regional collaboration

Source: Speaker's Commission on Regionalism Final Report,
*The New California Dream: Regional Solutions for 21st Century
Challenges*, Feb. 5, 2002

The new regionalism faces many challenges. The following are some examples:

- Fragmented Metropolitan Governance

Local governments are increasingly fragmented among multiple jurisdictions and districts.

- State Mandate

Top down state planning in the form of state mandates or infrastructure investments with little input from the local level has resulted in sub-optimal outcomes.

- Fiscal Disincentives

Proposition 13 has led to a fierce competition for local revenues among local governments. Local governments increasingly compete for sales tax dollars resulting in the fiscalization of land use.

- Limits of Council of Governments (COGs)

COGs lack the regulatory powers or fiscal tools necessary to promote regional collaboration. They do not have direct taxation powers or police powers. Generally, the COG serves as the Regional Transportation Planning Agency (RTPA) under the state law and as the federal Metropolitan (transportation) Planning Organization (MPO).

IV. Challenges: Regional Collaboration

◆ Technical Capacity

- Data and technical tools unavailable at the local level
- Unfamiliarity with regional level decision making and collaborative processes

◆ Political Will

- Little political reward for regional leadership among local officials
- Term limits often result in the development of myopic vision and short-term outcomes

Source: Speaker's Commission on Regionalism Final Report,
*The New California Dream: Regional Solutions for 21st Century
Challenges*, Feb. 5, 2002

•Technical Capacity

Limited technical capacity and availability of data coupled with unfamiliarity in regional level decision making and collaborative processes at the local level can be an impediment to regional collaboration.

•Political Will

The current system provides little political reward for regional leadership among local officials. In addition, term limits often favor decisions that create short-term visible outcomes over the possibility for long-term partnership building or development.

V. Contemporary Regionalism

◆ Organizing Concepts

- Regional-growth control, including boundaries limiting the outward extension of growth
- Regional coordination of transportation and land use
- Regional sharing of fiscal resources (tax-base sharing)

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

Regional strategies can generally be organized around the following concepts:

- Regional growth control
- Regional coordination of transportation and land use, and
- Regional sharing of fiscal resources

A visioning process is also an important organizing concept, including public viewing of the consequences of “business as usual” and the effects of various alternative land use/transportation scenarios (including “smart growth” scenarios.)

VI. Best Practices:

A. Regional Growth Control

State(s)	Metro Area(s)	Sample Program(s)	Scope	Functions/Goals
Oregon	Oregon cities and counties	Oregon Land Conservation and Development Commission (LCDC)	Statewide	Requires cities and counties to draw up growth-management plans and urban growth boundaries – reviews regional planning efforts for compliance with state goals
	Portland metro area	Metro	Regional – Portland metro area	Directly elected regional government – oversees planning for the metro area, sets growth limits, oversees growth boundary, coordinates land use and transportation planning
		Urban Growth Boundary (UGB)	Regional – Portland metro area	Establishes mapped limit to urbanization within a 3-county, 24-city metro region
		Tri-County Metropolitan Transportation District of Oregon (Tri-Met)	Regional – Portland metro area	Provides regional light rail and bus service throughout 3-county metro area

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

Portland is considered to be a national model for urban growth management and regionalism. It has an urban growth boundary (UGB) based on an urban service district, the Portland Metropolitan Service District. The UGB serves 1.3 million residents and is administered by a directly elected regional government called Metro that is the only one of its kind in the United States. Metro includes 3 counties and 24 cities in the Portland area.

To help curb sprawl and encourage orderly development, the state legislature created Land Conservation Development Commission (LCDC) in 1973. The LCDC requires cities and counties to draw up growth management plans and urban growth boundaries intended to preserve and protect the best farmland and forest resources. Metro, in the Portland Metro area, enforces the boundary, makes modifications to accommodate new growth, and requires consistency of local comprehensive plans with regional goals.

Between 1979 and 2000, the overall UGB territory has increased by only a little over 2%; the majority (90%) of population growth has occurred within UGB's limits in the 1980s; and the average size of residential lots has shrunk from 13,000 sq. ft. to 7,400 sq. ft. between 1979 and 1997.

Cont'd

Rapid development and a high projected population growth rate has created considerable pressure for expansion of the UGB. Housing prices have increased considerably; however, it is not entirely clear whether this increase is directly related to limited supply of developable land. In the 1990s, as Portland's economy continued to transition from a forestry and farm base to a high-tech base, the city attracted more people with high-paying jobs and an attractive living environment. This rapid growth in population likely put upward pressure on housing prices regardless of the UGB, as other prospering metropolitan areas that have no urban growth boundaries (e.g., Boston, San Francisco Bay Area, and Los Angeles) also experienced rapid increase in housing prices during this time period. Thus, it can be argued that part of the housing price increase in the Portland area is attributable to the economic growth and attractiveness of the region.

Portland has also made advances in integrating transportation and land use. In 1991, Portland adopted the Transportation Planning Rule (TPR) that requires local governments to amend their local land use ordinances to facilitate mixed use and higher density development around light rail. In addition, Portland has adopted the 2040 Regional Framework Plan and the Metro 2040 Growth Concept Plan calling for transit oriented development, reduction of auto trips, and improvement in jobs-housing balance.

Cont'd

Although regional growth control in Portland has been quite successful in achieving more efficient use of land areas (i.e., increased development densities and decreased lot size) there are some shortcomings in the Portland model. For example, while total employment in downtown Portland has increased, the city's share of regional jobs has decreased since the 1980s. Similarly, even though transit's share of the downtown commute is relatively high, on a regional level transit's share has trended downwards between 1980 and 1990. The underlying reason to these problems is the sprawl occurring inside the UGB. Even though the average lot size has decreased, Metro has achieved 70 percent of density projected for development within the UGB. Another problem is the radical change in the value of land from one side of boundary to the other. Land price can increase ten-fold, when land is moved inside the boundary, as and when the boundary is occasionally adjusted. This disparity in property value distorts price signals and contributes to uncertainty in the marketplace—market uncertainty often makes for difficult investment decisionmaking.

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

VI. Best Practices:

B. Regional Sharing of Fiscal Resources

State(s)	Metro Area(s)	Sample Program(s)	Scope	Functions/Goals
Minnesota	Minneapolis/St. Paul (Twin Cities) metro area	Metropolitan Council	Regional – Twin Cities	Oversees regional sewer, transit, land planning and tax revenue sharing
		Metropolitan Urban Service Area (MUSA)	Regional – Twin Cities	Coordinates growth and infrastructure, sets planned limits to growth
		Regional tax-base revenue sharing	Regional – Twin Cities	Distributes commercial property tax base across the region, reduces fiscal disparities, reduces municipal competition for commercial tax base

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

The Minneapolis/St. Paul Metropolitan Council (the Met Council) was created in 1967 by the Minnesota state legislature. For 27 years, the Met Council did not have any direct power over other regional agencies. With the passage of the Metropolitan Reorganization Act (1994), all regional sewer, transit, land planning, and tax-revenue sharing is under the authority of the Met Council. The Met Council is also responsible for developing a coordinated and comprehensive regional growth plan.

Starting in 1971, regional tax-base revenue sharing has been used to reduce fiscal disparities and competition for commercial tax base among jurisdictions. The Met Council collects 40 percent of its tax revenue from new commercial and industrial development for the seven-county region into a common fund. It then disburses these revenues in annual payments to each jurisdiction based on the inverse of the locality's revenue generating capacity. It appears that this growth sharing strategy has effectively decreased fiscal disparities across the region. Taxbase disparities between localities have been reduced from a 50 to 1 ratio to a 12 to 1 ratio.

Such a strategy should in theory minimize competition for funds, thereby reducing tendencies towards fiscalization of land use potentially leading to leapfrog development and sprawl.

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

VI. Best-Practices:

C. Regional Land Use Transportation Coordination

State(s)	Metro Area(s)	Sample Program(s)	Scope	Functions/Goals
Georgia	Atlanta	Georgia Regional Transportation Authority (GRTA)	Regional – Atlanta metro area	Coordinates transportation and land use, works toward increasing transit use and achieving compliance with federal clean air act requirements
	Atlanta	Metropolitan Atlanta Rapid Transit Authority (MARTA)	Regional – Atlanta metro area	Provides regional public-transportation services, encourages joint-development opportunities

Source: Oliver Gillham, *The Limitless City: A Primer on the Urban Sprawl Debate*, 2002

In late 1990s, congestion, sprawl, and bad air quality led to a crisis situation in the Atlanta metropolitan area. Federal funds for new transportation projects were cut off because of the region's failure to comply with the Clean Air Act requirements. Environmental groups challenged 61 highway projects in the 13-county Atlanta metropolitan region. The state settled the lawsuit in 1999 and allowed only 17 projects to move ahead until the region adopted a plan that complied with the air quality standards.

This crisis led to the creation of Georgia Regional Transportation Authority (GRTA) whose top priority was to bring the region's transportation plan into compliance with federal mandates. GRTA working with the Atlanta Regional Commission was successful in getting federal approval for the region's three-year Transportation Improvement Program (TIP). After a two year gap, as of July 2000, Atlanta qualified for federal transportation funding. The majority of the \$2 billion in TIP funds is dedicated to public transit, high occupancy vehicle lanes, bicycle, and pedestrian improvements.

GRTA uses a "carrot and stick" approach in dealing with local jurisdictions and development projects. The "carrot" lies in GRTA's ability to issue up to \$2 billion in bonds to help local municipalities finance public transit and other measures to mitigate congestion and bad air quality. The "stick" is described by GRTA's authority to approve or reject local land use transportation plans for major development projects.

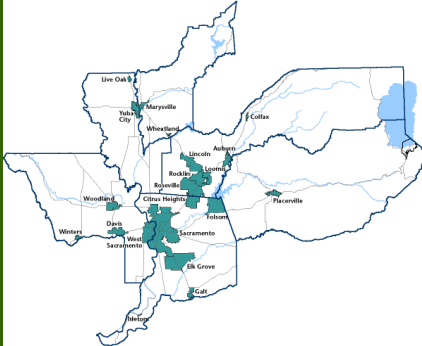
Another example of regional collaborative leadership is found in the Metropolitan Atlanta Rapid Transit Authority (MARTA) which provides regional public transportation services and pursues joint development opportunities in Atlanta. For example, MARTA is spearheading a 51 acre transit-oriented mixed use development in Atlanta's Buckhead region near Lindbergh rapid transit station.

VI. Best Practices:

D. Sacramento COG Regional Transportation Planning

How will the 6- county region address the projected growth in population and jobs over the next 50 years?

Transportation Needs?



Base Case Regional Future and Indicators	October 2002
Technical Research and Modeling Enhancements	June 2002-June 2004
Community Planning Workshops	Jan. 2003-Dec. 2003
Alternative Regional Futures and Indicators	July 2003-Dec. 2003
Preferred Regional Future and Indicators for Metropolitan Transportation Plan Analysis	Jan. 2004-June 2004

Source: www.sacog.org

Sacramento Area Council of Governments (SACOG) coordinates transportation planning and funding for the entire Sacramento region. The region is an association of local governments formed by six counties and 19 cities that provide a forum for the study and resolution of regional issues.

One of the major goals of SACOG is to estimate how the region will grow and what will be the resulting travel conditions. To this end, SACOG has launched a two-year comprehensive land use transportation study for the region. Elements of the study include development of: base case future indicators; an enhanced land use transportation model; alternative scenarios of future growth; and preferred scenarios of transportation planning and metropolitan growth. Examples of some of the types of data that will be developed are :

- Employment and population forecasts
- Housing demand by type and density
- Costs and impacts of alternative development patterns.

Public participation/community workshops have been recognized by SACOG as integral to this particular regional land use transportation process. Elected officials, community, civic, environmental and business leaders, and others came together to begin the discussion of how the region will address the growth in population and jobs projected for the next 50 years at “TALL Order: Balancing the Region’s Needs,” the fourth annual SACOG Regional Forum, held on October 18, 2002.

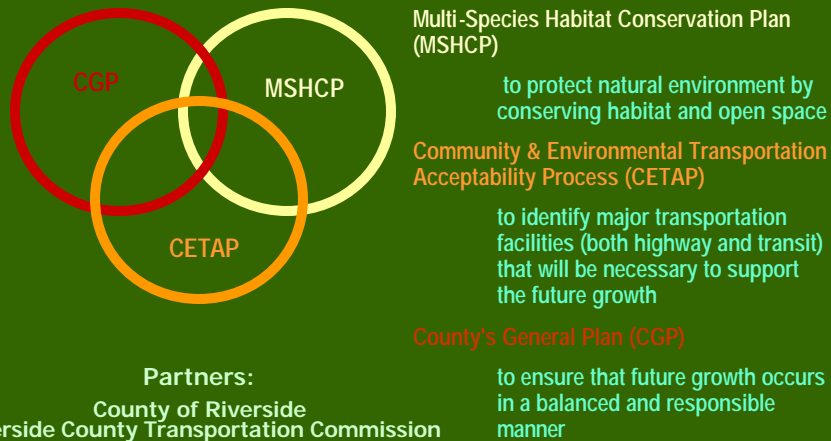
Cont'd

Communities of the Fresno metropolitan area including cities of Fresno and Clovis and counties of Fresno and Madera can launch a similar regional transportation planning study. Such an effort can also serve as a catalyst for regional collaboration to further explore areas of regional growth control, regional sharing of fiscal resources, and regional land use and transportation coordination throughout the eight-county region of the San Joaquin Valley.

Source: Sacramento Area Council of Governments. (www.sacog.org)

VII. Intra-County Collaboration

Riverside County Integrated Project



Source: <http://www.rcip.org/whyrcip.htm>

The County of Riverside and the Riverside County Transportation Commission in their Riverside County Integrated Project (RCIP) have embarked on a three-year comprehensive planning effort to simultaneously prepare environmental, transportation, housing, and development guidelines. The RCIP is a combined effort among jurisdictions to create regional plans that are coherent and internally consistent.

The major elements of the RCIP include:

- Multi-Species Habitat Conservation Plan (MSHCP)
The purpose of the MSHCP is to protect the natural environment, conserve habitat and wildlife, and preserve open space.
- Community and Environmental Transportation Acceptability Process
CETAP is designed to identify major highway and transit facilities that will be necessary to support and accommodate future growth.
- County's General Plan
The County's General Plan ensures that future growth occurs in a well coordinated, balanced, and responsible manner.

Source: County of Riverside. *Riverside County Integrated Project*. (<http://www.rcip.org/whyrcip.htm>)

VIII. Inter-County Collaboration

B. Inter-Regional Partnership (IRP)

◆ Partnership

- Alameda
- Contra Costa
- San Joaquin
- Santa Clara
- Stanislaus

◆ Three COG's:

- Association of Bay Area Governments
- San Joaquin Council of Governments
- Stanislaus Council of Governments

IRP State Pilot Project

AB 2864 (introduced by Torlakson) created the state funded IRP State Pilot Project to Improve the Balance of Jobs and Housing

Purpose:

- ❖ To create of Jobs/Housing Opportunity Zones
- ❖ Select 5 to 10 zones, offer a range of incentives, and encourage appropriate development
- ❖ Lessons learned to be used by HCD to develop a guidebook assisting LGs

Source:
<http://www.abag.ca.gov/planning/interregional/>

The Inter-Regional Partnership (IRP) is a collaboration between three Council of Governments: Association of Bay Area Governments, San Joaquin Council of Governments, and the Stanislaus Council of Governments and includes the counties of Alameda, Contra Costa, San Joaquin, Santa Clara, and Stanislaus. The IRP pursues a number of programs and actions to improve inter-regional cooperation on transportation and growth-related issues. The objectives of this partnership are to:

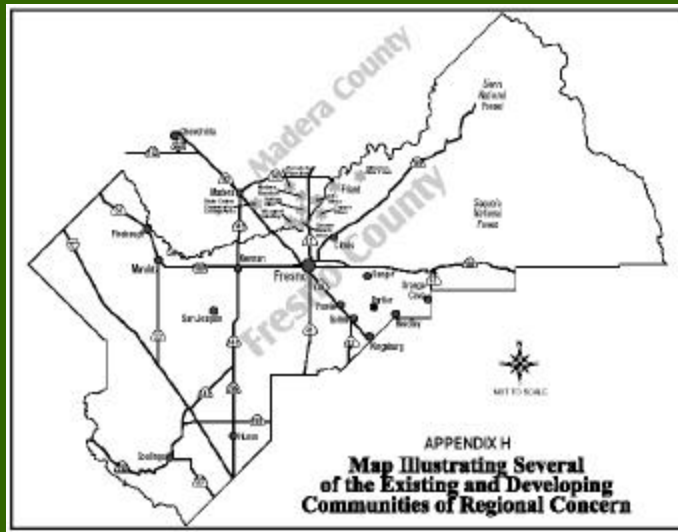
- Achieve a more equitable jobs/housing balance
- Improve transportation and air quality
- Enhance the quality of life
- Pursue inter-regional economic development opportunities
- Establish more sustainable methods of moving people between their homes and distant jobs

One of the major initiatives is the Job/Housing Opportunity Zones IRP Pilot Project. The IRP has identified potential job or housing opportunity sites in the region. These sites will be offered a range of incentives to encourage appropriate development, i.e. housing development in "job-rich" areas and employment centers in "housing-rich" areas.

The lessons learned from this pilot project will be used by the Department of Housing and Community Development to develop a guidebook assisting local governments develop plans to balance jobs and housing in their jurisdictions.

Source: Association of Bay Area Governments.
(<http://www.abag.ca.gov/planning/interregional/>)

IX. Local Partners and Cooperation



Source: 2025 Fresno General Plan

The Regional Cooperation Element in the 2025 Fresno General Plan emphasizes the need for cooperation in land use planning, transportation, urban services, and environmental issues among all local jurisdictions. The General Plan recognizes that neighboring cities and counties can be adversely impacted by land use and planning decisions made by the City of Fresno. Conversely, the City of Fresno can be negatively impacted by decisions made in other jurisdictions if there is little cooperation or dialogue between decisionmakers. Hence, projects of regional significance should be coordinated with neighboring jurisdictions and agencies during planning, approval, and implementation stages of these projects.

Source: City of Fresno. *2025 Fresno General Plan*.

http://www.fresno.gov/development/general_plan/Chapters/Chapter4.pdf

IX. Local Partners and Cooperation

◆ MOU & JPR

- Memorandum of Understanding (MOU) between Fresno County, City of Fresno, and City Redevelopment Agency
 - Guide for coordinating land annexation and property and sales tax allotment in the City's sphere of influence
- Joint Planning Resolution (JPR) between City of Fresno, City of Clovis, and Fresno County
 - Regional coordination in urban growth and development:
 - General Plan Updates
 - Establishment of Spheres of Influence
 - Policy Formulation
 - Provision of Urban Services and Urban Unification

◆ The Fresno Local Agency Formation Commission (LAFCO):

- Approves proposals for annexation, district formation, city incorporation, and sphere of influence amendments

Source: 2025 Fresno General Plan

(http://www.fresno.gov/development/general_plan/Chapters/Chapter4.pdf)

A Memorandum of Understanding and the Joint Planning Resolution formalize cooperation between Fresno City and other jurisdictions in matters of land use planning and revenue sharing.

Memorandum of Understanding (MOU)

“The MOU between Fresno County, the City of Fresno, and the City Redevelopment Agency was established in February 1991. The MOU is used as a coordination guide when land is annexed and development occurs within one-half mile of the city limits or in the city's sphere of influence. As land is annexed, property and sales taxes are allotted proportionally between the City of Fresno and Fresno County. A primary goal contained in the MOU is the coordination among jurisdictions on land use matters and policy changes that impact growth or public services in the city's sphere of influence.

Joint Planning Resolution

In 1983, the City of Fresno, the City of Clovis, and Fresno County agreed on a Joint Planning Resolution which became part of the city's 1984 General Plan and is incorporated in the 1991 MOU. The Joint Planning Resolution states the two cities and the county will work cooperatively on issues regarding urban growth and development and encourages regional coordination in general plan updates, establishment of spheres of influence, policy formulation, provision of urban services, and urban unification.”

Another important document binding Fresno County and Fresno City is an agreement signed in January of 2003 that addresses issues including sales and property tax-sharing, land use, water for new growth, and the use of mediation to resolve conflicts on regional issues. While all these documents provide some guidance in coordinating land use decisionmaking—at least between Fresno and Clovis cities and Fresno county—do they capture relevant regional scale issues that extend beyond, yet involve, these jurisdictions? With rapid growth in neighboring Madera county, for example, expanding these agreements may help to address certain regional-scale problems.

IX. Local Partners and Cooperation

■ Madera County

- Approved land use plans that will impact and influence Fresno metropolitan area growth
 - Madera County General Plan
 - Gunner Ranch-West Area Plan
 - Rio Mesa Area Plan

■ Council of Fresno County Governments (COFCG)

- COFCG is the Regional Transportation Planning Agency
- Provides technical services

■ Special Districts

- Fresno Metropolitan Flood Control District (FMFCD)
 - Provides comprehensive storm water management
 - Covers Fresno, Clovis, and Fresno County
- San Joaquin Valley Air Pollution Control District (SJVAPCD)
 - Prepares Air Quality Attainment Plan
 - Covers San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and western Kern Counties
- Fresno Irrigation District (FID)
 - Water delivery for groundwater recharge
 - Fresno and neighboring areas
- School Districts
 - The City coordinates land use plans with seven districts

Source: 2025 Fresno General Plan

(http://www.fresno.gov/development/general_plan/Chapters/Chapter4.pdf)

The Fresno City Council and the Madera County Board of Supervisors conducted their first joint meeting on February 25, 2003, to discuss issues that affected Fresno City and Madera County. Issues included air pollution, water, land use, transportation, and jobs. They have set a second meeting for April 16, 2003, to continue the dialogue and address the issues further.

Other prominent agencies that contribute to regional planning in the Fresno Metropolitan area include Council of Fresno County Governments and the San Joaquin Valley Air Pollution Control District.

Council of Fresno County Governments (Fresno COG)

Fresno COG is a Regional Transportation Planning Agency whose major role is to promote intergovernmental coordination, conduct comprehensive regional planning with an emphasis on transportation for the Fresno metropolitan area, foster public participation, and provide technical service to its members. For more information, see <http://www.fresnocog.org/>

The San Joaquin Valley Air Pollution Control District (SJVAPCD)

SJVAPCD is a regional agency responsible for bringing San Joaquin Valley Air Basin (which covers counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Western Kern) in compliance with California Ambient Air Quality Standards. SJVAPCD prepares and updates the Air Quality Attainment Plan for the region. This plan is a guide for development based on air quality regulations that identifies policies and programs to be considered by local governments in land use decisions. For more information, see <http://www.valleyair.org/>

Source: 2025 Fresno General Plan

(http://www.fresno.gov/development/general_plan/Chapters/Chapter4.pdf)

Module III: Toolkit Development

I. Phase II Toolkit Development

❖ Phase II: Transforming Phase I into an analytic process, for demonstration in Phase III

❖ Ongoing Tasks:

- Understanding the issues and planning context
- Compiling best practices
- Selecting appropriate model support tools
 - Identifying critical inputs and outputs of an ideal LU-T model
 - Identifying additional constraints on model selection
- Specifying an analytic framework for LU-T modeling

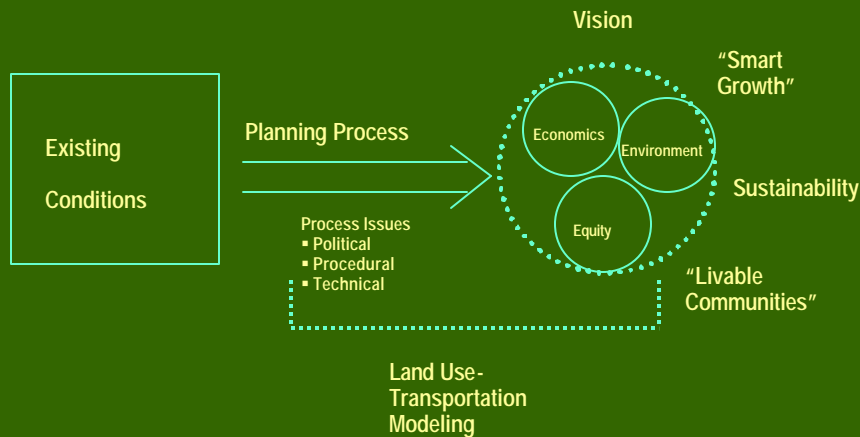
Ultimately, this study intends to demonstrate how certain local-level decisions affect the Fresno metropolitan area, and the San Joaquin Valley more generally. A goal of Phase II of the study is to develop a collection of useful information and tools (a “planning toolkit”) for local planning organizations and other regional agencies in the San Joaquin Valley.

So far the planning toolkit includes: an overview of the issues of the San Joaquin Valley, a review of the concept and issues associated with regionalism, and potentially relevant examples of smart growth best practices. A centerpiece of this toolkit is the specification of an analytic framework to be applied in the integrated land-use transportation modeling exercise envisioned for Phase III of this study.

Phase II work began by exploring the relationship between modeling and the typical planning process at the local level, and with respect to pressing issues facing the San Joaquin Valley. Certain issues, such as preservation of agricultural land, poverty, unemployment, housing, traffic and congestion, and air quality emerge as important factors to consider in a regional modeling exercise that may influence local planning decisions.

Based on expertise within the consultant team, information gathered from the client and stakeholders, model-builders, and a growing body of literature, an analytic framework for integrated land use-transportation modeling is presented along with a short list of candidate models that may be plugged into this framework, and a description of remaining gaps that may need to be filled as the modeling effort is underway. More detail on our screening of models and interviews with model developers and users is provided in Appendices B and C.

II. Modeling Can Inform 'Smarter' Planning

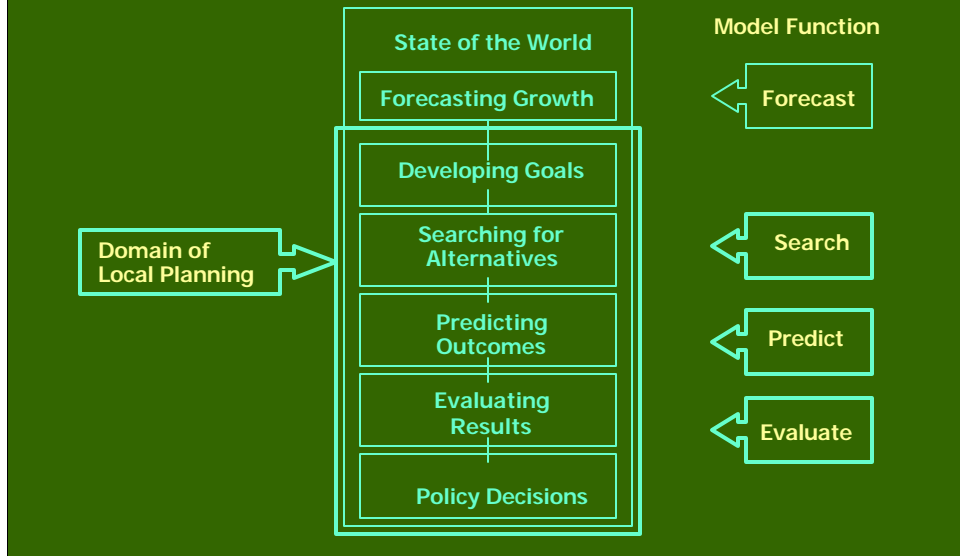


A simple diagram shows that the planning process facilitates movement from a current state, to a preferred vision for the future. This movement involves important decisions regarding land-use change, which concern a wide variety of citizens, planners, resource agencies and decision-makers. In this study, it is assumed that a preferred vision for the Fresno metropolitan area and the San Joaquin Valley embraces the concepts of “smart growth”, “livable communities” and “sustainability” at local and regional levels.

Yet, the planning process is characterized by a number of political, procedural, and technical realities, which sometimes hinder the development of and movement towards a preferred vision. These may include lack of consensus, lack of understanding of the various issues and implications of certain land-use decisions, lack of institutional coordination, and unavailability or inability to deal with information at various scales and in different formats. Together, these issues conspire to create reactive land use and transportation planning with suboptimal results.

Computer modeling is an important tool that can be used to better understand the drivers of land-use change and shape the planning process. Involvement of stakeholders in the modeling exercise, for example, provides an opportunity to contribute inputs and better understand the implications of their actions. Results can influence the planning process by providing useful information to decision-makers. In short, modeling provides an opportunity to respond to growth through proactive planning that is informed by considering potential effects on the environment, the community, and quality of life issues at local and regional levels.

III. Model Functions and the Local Planning Process



Several models are available that provide useful applications at various stages of the local planning process, and perform one or more of the following functions:

Forecasting: Forecasting itself generally occurs outside the local planning window to project regional-scale location decisions of industry, residences, and travel patterns. These models help to illustrate scenarios of growth and are based on forecasts along various parameters (e.g., population, economy, air quality, water supply and demand, traffic/vehicle miles traveled (VMT) forecasts.) With potential scenarios of growth in mind, local jurisdictions can set planning goals (e.g., preservation of agricultural land, jobs creation, VMT reduction, compact communities, mixed-use development, jobs/housing balance, remove blight, increase tax base, etc.)

Searching for Alternatives: Reaching planning goals requires the development of alternative plans that may support these goals. Alternatives can be generated by adjusting various decision variables at local and regional levels of decisionmaking (e.g., growth boundary, soil conservation policy, local economic development, carpool/vanpool, transit services, development density, urban in fill, housing and retail along transit corridors, urban centers, mixed-use, etc.)

Predicting Outcomes: Predictive models are useful for predicting outcomes of the various alternatives. Outcomes can be estimated for a number of performance measures (e.g., VMT, area of agricultural land, number of jobs, travel time, level of poverty, tax revenue, housing gap, and accessible amenities.) This function can be applied at both local and regional scale.

Evaluating Results: Outcomes can be evaluated in a manner that can support preferential ordering of planning options and policy decision-making.

IV. Continuum of Applications for Modeled Information

Scale of Intervention	Scope of Analysis	Actors in the SJV Context	Model Functions of Interest
Policy	Region	Air Quality Board, COG	Predict, Evaluate
	SMSA	County	Predict
	City	City	Forecast, Search
	System		
	District		
	Neighborhood		
	Project		
	Block		
Product	Parcel	Developers, Public Works	

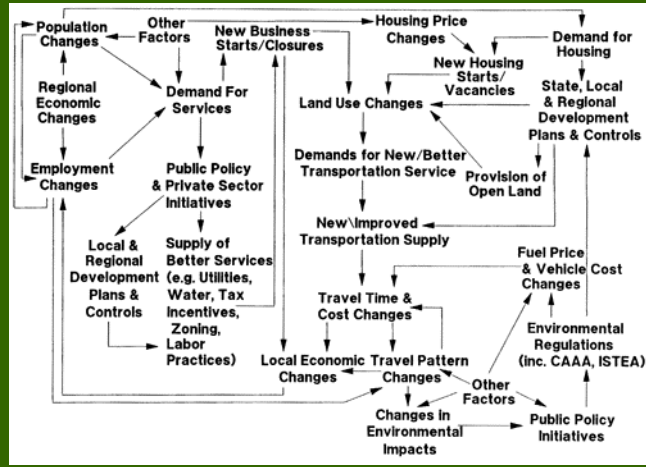
At each stage of the planning process, different parties—each with different perspectives, technical backgrounds, and needs for information—may contribute in a different manner, or favor information of differing nature. Exploring (searching for) alternative plans based on growth forecasts and stated goals, for example, might involve less technically minded stakeholders or decision-makers at the local-level. More comprehensively and at regional scale, other functions may be needed; this might involve more complex technical processing of information and require sharing of information between various models (e.g., transportation models, air quality models, etc.) to predict various outcomes and evaluate the regional impact of various local or regional policy options.

Specifying a model that complements the planning process becomes complex when considering the various issues, stakeholders, scale, and data relationships. Linking various models may require aggregating or disaggregating data and/or attributing results to differing functional units required as inputs (or produced as outputs) of various other models. Searching for alternatives (e.g., by “sketch planning”) may generate a number of testable land use plans for example. Economic models can be run to test whether these plans are economically viable, and may also return results that must be allocated to various land uses according to various rules. These land uses must be at a scale and in a form to support input requirements of traffic models. Land uses must also be defined at appropriate scale to make analysis of other environmental processes meaningful, and air quality emissions models require, in part, certain outputs from traffic models (e.g., VMT).

Several of the models reviewed perform more than one of the functions and linkage requirements described above, but some appear to outperform others in certain areas, especially when considering various scales of intervention, scopes of analysis, and ability to support the policy needs of various actors in the San Joaquin Valley.

V. A Generic Model of Urban Systems

Complexities
of large-scale
models and
the difficulties
of specifying a
generic
toolbox

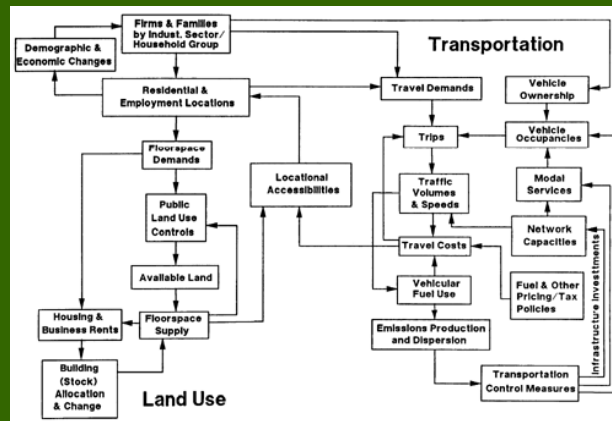


Source: Frank Southworth, 1995

To get a better sense of why a complex suite of models and functions may be necessary, consider the various urban systems factors that need to be comprehensively represented in an integrated land use-transportation model.

Source: Southworth, F. 1995. *A Technical Review of Urban Land Use-Transportation Models as Tools for Evaluating Vehicle Travel Reduction Strategies*. Center for Transportation Analysis, Energy Division. July.

VI. A Generic Model of the Land Use-Transportation Connection



Source: Frank Southworth, 1995

Source: Southworth, F. 1995. *A Technical Review of Urban Land Use-Transportation Models as Tools for Evaluating Vehicle Travel Reduction Strategies*. Center for Transportation Analysis, Energy Division. July.

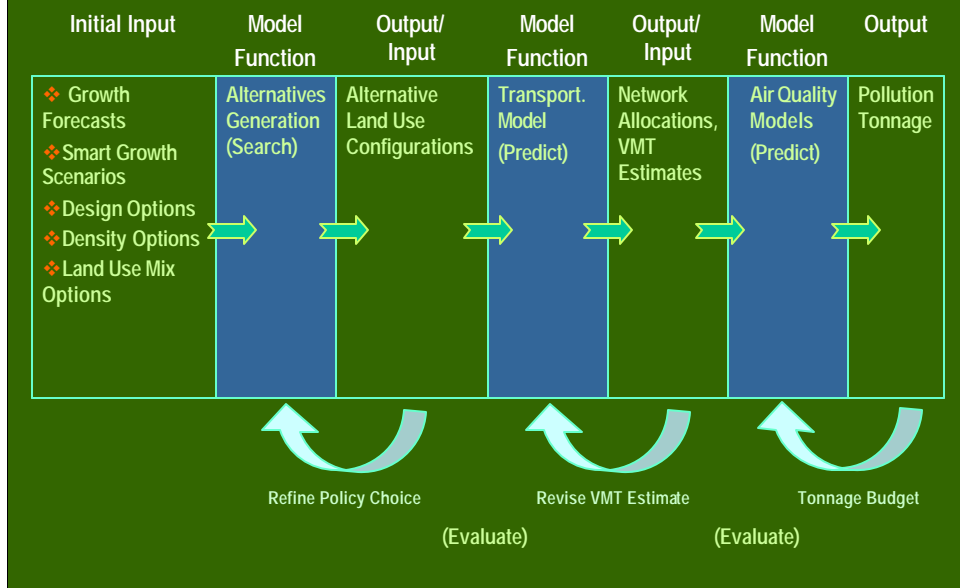
VII. Decision Variables and Performance Measures Used to Evaluate Alternative Outcomes

State Variables	Goal Variables	Decision/ Policy Design Variables	Performance Measures
Population Forecasts	Preservation of Ag Land	Urban Growth Boundaries	VMT
Economic Forecasts	Jobs Creation	Soil Conservation	Cost
Air Quality Forecasts	VTMT Reduction	Local Economic Development	Revenue
Traffic and VMT Forecasts Etc.	Compact Communities	Carpool/Vanpool	Acres
	Mixed Use Development	Transit Services	Jobs
	Jobs/Housing Balance	Density and FAR Standards	Travel Time
	Increase Revenue, Etc.	Walkable Communities, Etc.	Poverty
			Housing Gap
			Accessibility, Etc.

Considering these relationships and the setting in which the Phase III modeling exercise will take place, several potentially critical inputs and outputs emerge that a detailed specification should be able to accommodate.

Sources: Ewing, R., and R. Cervero. 2002. *Travel and the Built Environment*; Miller, E.J., D.S. Kriger, J.D. Hunt. 1999. *TCRP Web Document 9: Integrated Urban Models for Simulation of Transit and Land-Use Policies: Final Report*.

VIII. An Example of the Modeling Process



This diagram illustrates how a suite of model functions may be integrated. Note that the output of one model can serve as input to a higher level of modeling exercise, and that evaluating output from the highest level of modeling—in this example involving air quality estimates—may serve to define performance targets at a lower level. In this example, achieving the desired air quality performance target may require evaluation of outcomes and refinement of transportation and land use options.

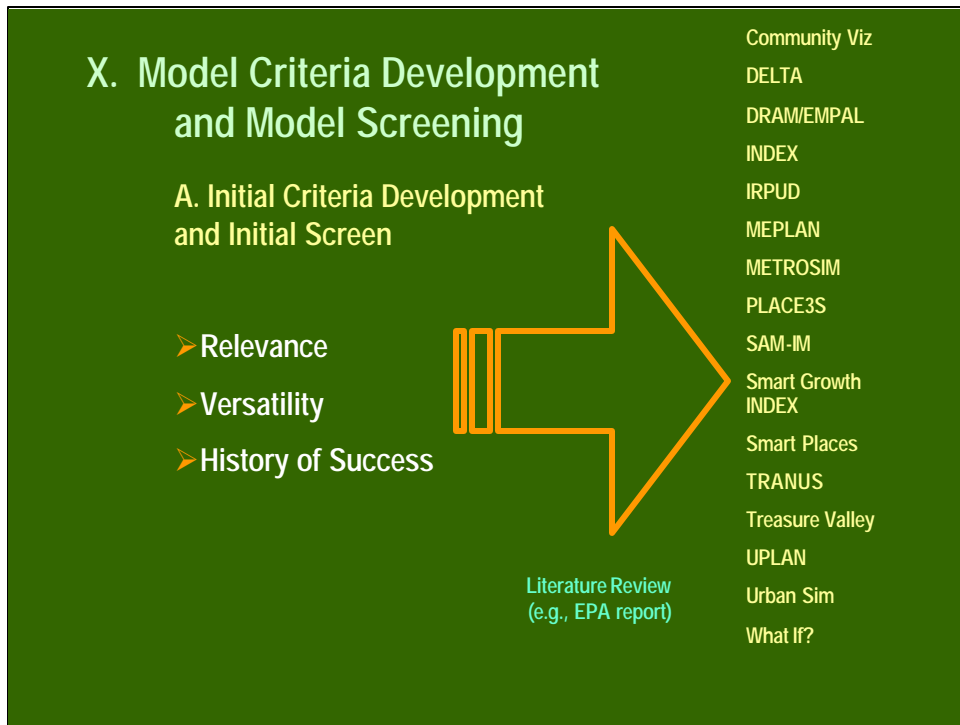
IX. Model Criteria Development and Model Screening

- ❖ Development of Initial Criteria
- ❖ Initial Screen
- ❖ Refinement of Criteria
- ❖ Second Screen
- ❖ Preliminary Model Specification

Criteria for model selection have been developed with the planning process and awareness of the issues facing Fresno and the San Joaquin Valley in mind. In developing criteria, it was recognized that several of the models are capable of performing more than one model function described above (search, predict, evaluate) and several seem to be linkable to other models to further enhance their functionality. Models also vary in the utility for the various participants in the planning process in terms of their inputs and outputs. Finally, data requirements and available resources, which may have implications for the Phase III modeling exercise, also vary between models.

Specifying a preliminary framework for an integrated land use-transportation model, or suite of models, has led to the systematic approach of criteria development and model selection that follows. Criteria have been developed through an iterative process of understanding model capabilities, and defining the scope and scale of the modeling problem. None of these models has actually been run in Phase II of the study.

Ultimately a final selection of a model, or combination of models will have to be made by the Phase III team, with full awareness of the modeling context, specific modeling questions in mind, and with a complete assessment of available data and resources. A final specification will describe necessary inputs, linkages between components, and intended outputs. These details will necessarily emerge with further consultation with stakeholders and Caltrans staff, and as the modeling effort is underway. Data and resource availability, for example may limit the extent to which certain questions can be addressed, and these limits may vary between applications for the Fresno metropolitan area and small rural communities elsewhere in the San Joaquin Valley.



In a 2000 report, the EPA summarized characteristics of 22 leading land use change models currently in use or under development. This is not an exhaustive set; several other models are also available. From nearly 30 models available for review in Phase II, an initial short list of 18 potentially promising models was developed. This list was developed by asking three critical screening questions:

1. Is the model generally relevant to the task? Does it allow consideration of land use, economic, environmental and transportation data? Does it allow us to model the effects of various land use, economic, environmental and transportation policies?
2. Is the model sufficiently versatile? Can it be adapted to different applications, scaled up and down as necessary, and/or linked to other tools?
3. Does the model have a history of success, including applications in California?

Note that these initial criteria do not consider data requirements, or resources required to set-up and use the various models, nor do they explicitly consider point of intervention in the planning process.

Source: U.S. Environmental Protection Agency. 2000. *Projecting Land Use Change: A Summary of Models for Assessing the Effects of Community Growth and Change on Land-Use Patterns*. EPA/600/R-00/098. Prepared by Science Applications International Corporation. September.

XI. Refinement of Model Criteria: Second Screen

Planning Support

At which stage of the planning process does the model excel?

Model Capabilities

Does the model perform land use allocation in response to policy variables?

Does it enhance conventional 4-step transportation models?

Does it predict a wide range of environmental consequences?

Does it provide visual output or GIS interface?

Model Utility

Data requirements (cost/ease/scale/granularity)

Resources required (\$\$'s: staffing, training, and maintenance)

Representation capacity and capabilities













In a second screen of available models, model capabilities and utility were considered more specifically. The various points in the planning process at which the various models can best be applied were also considered. This second screen was conducted based on more detailed analysis of the 2000 EPA report, as well as interviews with various model developers and users, including:

- John Douglas Hunt, University of Calgary (MEPLAN and PECAS)
- Alex Anas, Alex Anas & Associates (METROSIM)
- Jerry Walters, Fehr & Peers Associates (Smart Growth INDEX)
- Richard Klosterman, Community Analysis and Planning Systems (What If?)
- Robert Johnston, UC Davis (MEPLAN, UPLAN)
- John Fregonese, Fregonese CalThorpe Associates (PLAC3ES)

A more detailed description of the second screen and model descriptions based on review of the literature and interviews are compiled in Appendices B and C.

XII. Model Criteria Development and Model Screening

Categorization by Planning Support Function

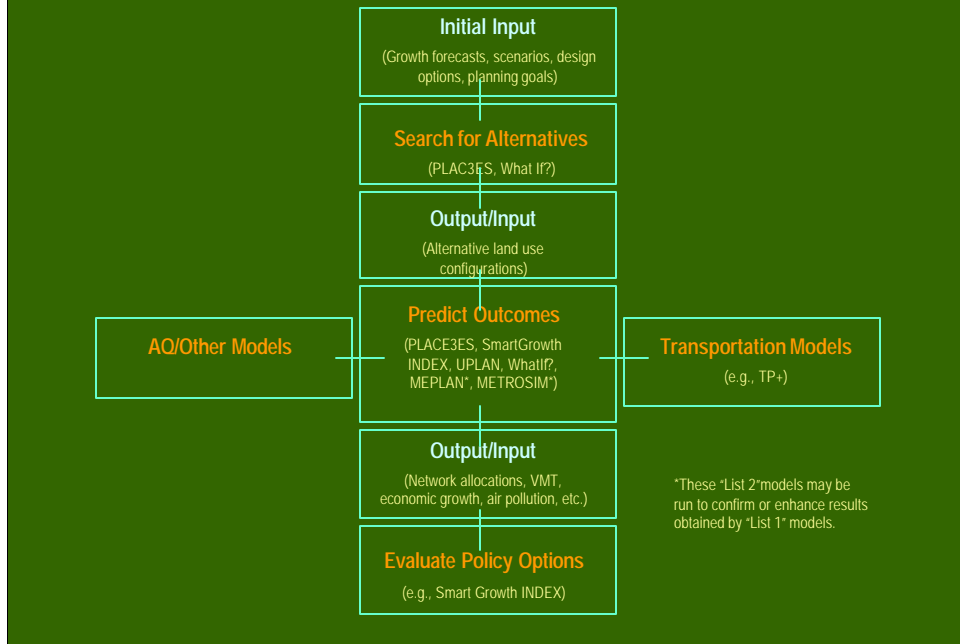
	Model	Function			
		Forecast	Search	Predict	Evaluate
List 1	PLAC3ES				
	SMART				
	GROWTH			(Regional scale prediction and linkages could be enhanced by List 2 models)	
	INDEX				
	UPLAN				
	What If?				
List 2	MEPLAN				
	METROSIM				

Two general lists of models emerge in the second screen. One list contains models that appear to be most useful at local scale, have less technical stakeholders in mind, and provide general guidance for asking “what if” questions during “sketch-planning”. These “List 1” models do not require vast amounts of data or extensive calibration, and can be linked to traffic models via GIS. “List 2” models, on the other hand, are based on more rigorous economic algorithms, can take advantage of a wider range of data, can produce a wider range of outputs, and when calibrated may produce more precise results. “List 2” models are generally more expensive, data-intensive, and require more expertise to set-up, run, and maintain. Combining models from both lists may have an advantage in being able to more capably solicit input from stakeholders, and combine various local-level information at regional scale and with additional models.

By comparison, SACOG, in an ongoing planning exercise, has chosen to link PLAC3ES, MEPLAN, UPLAN and TP+. Specifically, PLAC3ES is used for developing land use scenarios at neighborhood, community and county levels (i.e., “sketch planning”). These plans are then entered into a MEPLAN-based model that has been developed for Sacramento for 57 travel analysis zones. MEPLAN represents land markets and allows for rigorous examination of market-based land use policies. UPLAN, using simple “attraction” rules can disaggregate MEPLAN’s zonal outputs to 50-m grid cells, appropriate for linkage to habitat, agricultural, water quality and other environmental system models. MEPLAN outputs can also be linked to Sacramento’s travel model (based on TP+) which can generate travel estimates and emissions projections.

Similarly, Dr. John Douglas Hunt has been asked to develop a framework for an integrated land-use transportation model for the Southern California Association of Governments (SCAG.) To date, he has considered 13 models, seven of which also appear on the short list that emerged after the initial screen. Two of the four models that Hunt recommends for application in the SCAG region are represented on “list 2” of the second screen (i.e, MEPLAN and METROSIM). He is also recommending that SCAG support further development of a model called PECAS.

XIII. Framework for Land Use-Transportation Modeling



Results of this second screen suggest a preliminary framework for an integrated land-use transportation model that combines a number of models with different capabilities and utility.

Initial input could include growth forecasts from the Fresno COG; growth scenarios from Fresno and Clovis; generic design options; density options; and land use mix options. A number of models (e.g., PLACE3ES, “What If?”) could be applied to give alternative land use configurations as output based on these initial inputs. Preliminary output from these models could already inform a refinement of policy choice, and be used to reiterate the previous step with different inputs.

With a reasonable range of alternative land use configurations, a land use model (e.g., PLACE3ES, Smart Growth INDEX, UPLAN) that integrates via GIS existing CalTrans and COG transportation models (e.g., TP+) could be used to generate local network allocations and VMT estimates for different alternatives. A land use model, that is based on more rigorous economic algorithms (e.g., MEPLAN) could also be run to enhance or confirm land use allocation results at local level, and/or be used to link local-level outputs at regional scale.

Transportation model outputs (e.g. VMT estimate) can serve as input to air quality models run by the San Joaquin Valley Air Pollution Control District. Land use model outputs could be fed into other environmental models as well (e.g., for habitat, water quality, etc.) Environmental consequences (e.g., pollution tonnage outputs) could serve to refine performance targets and monitor progress towards these goals. Land use-transportation configurations may be refined as necessary, and models re-run to explore implications of various alternatives.

XIII. Data Sources

- ◆ California State University, Fresno, ISIS
- ◆ Fresno Business Council, Collaborative Regional Initiative
- ◆ Fresno COG
- ◆ Fresno County
- ◆ City of Fresno
- ◆ City of Clovis
- ◆ Madera County
- ◆ CalTrans GIS Data Library
- ◆ California Spatial Information Library
- ◆ California Environmental Information Catalog

A number of potentially useful data sources have been identified for a land use-transportation planning exercise in the the San Joaquin Valley:

- California State University, Fresno, Interdisciplinary Spatial Information Systems Center is the regional repository for GIS data (<http://www.isis.csufresno.edu/>)
- Fresno Business Council (FBC) Collaborative Regional Initiative (CRI) is underway, and promises a compilation of GIS data for the San Joaquin Valley. Contact Barbara Steck.
- Dowling Associates developed the Fresno COG county-wide peak hour traffic demand model. Contact Michael Aronson.
- Fresno COG keeps and updates the Fresno traffic demand model. Contact Mike Bitner. Kathy Chung can provide socioeconomic data for the Fresno region
- Fresno County Geographic Information Office keeps GIS data for Fresno county and the region. Contact Hal Eidal.
- City of Fresno maintains a GIS database. Contact Gary Unruh, Joanne Tolladay and Mario Rocha
- City of Clovis maintains a GIS database. Contact Bill Fox.
- Korve Engineering developed the Madera county transportation model. Contact Steve Lowens.
- County of Madera maintains the county transportation model. Contact Bob Townsend. Bob Stone provides demographic/socioeconomic information for Madera County Transportation Commission.
- Madera County Planning Department maintains a GIS database. Contact Becky Beavers.
- Caltrans GIS Data Library Catalog (<http://www.dot.ca.gov/hq/tsip/TSIPGSC/library/libdatalist.htm>)
- California Spatial Information Library (<http://gis.ca.gov/catalog/>)
- California Environmental Information Catalog (<http://ceres.ca.gov/catalog/>)

References







Appendix A: Stakeholder Interviews



















Appendix B: Model Screening















Appendix C: Model Developer/User Interviews











**Appendix D:
Examples of LU-T Tools
(Jerry Walters, Fehr & Peers)**